Volume 94 Number 17

STEEL

Production • Processing • Distribution • Use

The Week in Perspective

STORM-TOSSED LABOR, still far from pacified, in some localities is running dangerously afoul of public opinion; in general difficulties are becoming decentralized, more tractable. p. 10

STEEL PRODUCTION pushes ahead, last week reaching 55 per cent, up 4 points. p. 11

WAR PROFITS OF INDUSTRY, currently being "investigated" by legislators, fade into obscurity when compared with staggering deficits of postwar adjustments. p. 20

DURABLE GOOD INDUSTRIES, in report to Washington, note only slight recovery; affirm need for amending securities act, and for providing loans to going industries. p. 15

NEW TYPE OF SOAKING PIT, eight of which have been installed by an eastern steelmaker, is one-way fired, with oil fuel. p. 45

HEATING AND HANDLING of steel for forgings in the Ford plant is done expeditiously by means of unusual types of gas-fired furnaces and conveyors. p. 25

IRON AND STEEL MARKETS in brief: New contracting quieter after rush to make old prices; shipments heavy; consumption firm; new business hopeful. p. 49

FOR THE FOURTH TIME in the last four issues, STEEL *presents news of developments in the steel house field. This week: A structure just finished at Wheeling, W. Va.* p. 28

STEEL SHEET PILING, of the interlocking variety, has been driven along the sides of two 400-foot ice-harassed jetties at Nome, Alaska. Greater strength and decreased maintenance over timber result. p. 32

TWENTY TONS of stainless steel, formed and welded into a 58-foot fractionating tower, aid distillation of fatty acid in a Chicago plant. p. 31

DE-SEASONALIZE is a word with which automobile production executives may become more familiar, if efforts to level off peaks and valleys in car sales are realized. p. 16

MOPPING TANKS may be seen nightly in most any large building. A little known use for steel, taking about 100 tons annually. p. 36

FOR every dollar of sales in 1933, American manufacturers earned an average net profit of 0.9 cent. For every dollar of sales in the same period, steel producers incurred an average net loss of 6.9 cents. p. 23

TWENTY-FIVE leading steel producers reduced the average loss on capitalization from 2.85 per cent in 1932 to 0.91 per cent in 1933. p. 22

National Labor Union Drive, in Confusion, Loses Momentum

AGGRAVATING, because current developments are not conclusive, the labor situation seems to be entering a new phase. The clash between theory and practice is more apparent and the number of problems is increasing. However, the very growth of confusion is dulling the edge of the principal issues.

Whereas, up to the time of the Wagner bill hearing, American Federation of Labor units were in the forefront in labor discussions, today their dominance is less pronounced. In many localities, other national labor unions are struggling for power. The result of the activities of three or four aspirants for opportunities under Section 7A of NRA is that the forces of the national labor union movement are being dissipated through decentralization and confusion.

This is noticeable in Detroit where the Mechanics Educational Society of America is more militant and more aggressive than the A. F. of L. locals. In Cleveland the Industrial Workers of the World—unheard of for several years—is attempting to capitalize on the present situation. The appearance of several "outlaw" union factions, with their attendant disputes, is serving to put the nationally organized labor movement in a defensive position in the eyes of the American public. For this reason, the danger of serious general strikes is somewhat less pronounced than it was two weeks ago.

Ask Withdrawal from NRA

A strange situation obtains in Chicago, where the employes of the Chicago Motor Coach Co. belonging to the Chicago Motor Coach Employes fraternity suggested to the management "for serious consideration, the question of its withdrawal from NRA and the removal of the blue eagle" as a protest against action taken April 5 by the Chicago labor board, of which Robert Hutchins, president of the University of Chicago, is chairman. The employes complained that the Chicago labor board has acted unfairly in discriminating in favor of national labor unions and against the members of the Chicago Motor Coach Employes fraternity. This fraternity includes all employes of the Chicago Motor Coach Co. except five temporary employes.

Another phase of the labor situation is reflected in the South where manufacturers of both liberal and conservative schools are up in arms over the recent ruling by General Johnson which practically eliminates the North-South wage differential for the coal industry in Alabama. It is said that this ruling raises the minimum wage in Alabama coal fields $1.20 a day. Alabama mine owners feel that if this order prevails they will be obliged to close their mines, with the result that from 12,000 to 15,000 miners will be put out of work.

The feeling is widespread through the South that while equality with the North in wage rates may be desirable in theory and probably could be accomplished in time, it is unsafe and uneconomic to attempt to do it overnight. The more optimistic observers feel that the differential could be wiped out if attempted in easy stages over a period of some years.

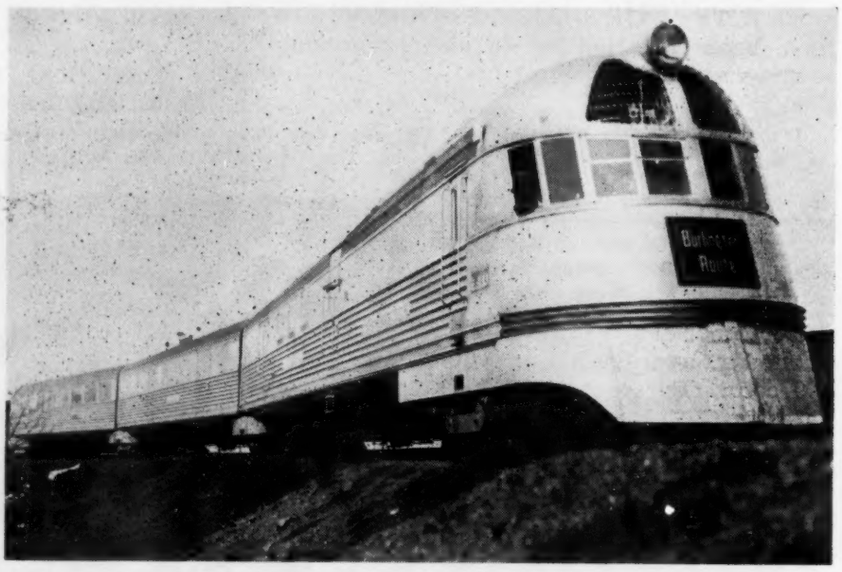
Another indication of subtle changes which are occurring in labor circles was afforded at the meeting last week in Pittsburgh of the Amalgamated Association of Iron, Steel and Tin Workers. As is well known, this is an old line organization, which up to the time of NRA was dominated by conservative leaders. Last year 95 delegates attended the annual meeting. The highest number of delegates in any previous meeting was 229 in 1919.

An entirely different picture was presented in last week's meeting. A total of 225 delegates attended. Whereas in past meetings the old-timers kept a firm grip on the proceedings, this year a younger element, led by William J. Long, organizer in the Weirton district, attempted to win domination.

Conservatives Shouted Down

Although the conservative element fought bitterly, the younger and more radical members succeeded in adopting a plank which among other things would give steel companies ten days to grant recognition, with the strike as an alternate; would abolish company unions and would work out agreements between the Amalgamated and railroad, coal and automobile unions.

Senator James J. Davis, of Pennsylvania, addressed the meeting April 18 and condemned the cost and waste of strikes. Some of the younger Amalgamated members attempted to prevent the senator from addressing the meeting. Thursday, Mrs. Cornelia



STAINLESS STEEL SPEEDSTER CLOCKED AT 104 M.P.H.: "The Burlington Zephyr," all-steel streamlined diesel-powered train, on its first official run last Tuesday, easily exceeded the century-mark in speed on tracks of the Reading railroad near Trenton, N. J. Exterior of the train is "shotwelded" 18-8 stainless steel, assembled by the Edward G. Budd Mfg. Co. in Philadelphia. The Winton diesel engine is provided with welded steel crankcase and rests on a welded engine bed of high-strength steel at the front of the first car. The train was christened in Philadelphia Wednesday, with appropriate ceremonies and speeches by many prominent officials, including W. A. Irvin, president of United States Steel Corp., Gerard Swope of General Electric and Alfred P. Sloan of General Motors. Wide World photo

Pinchot, wife of the governor of Pennsylvania, addressed the meeting.

From evidences all along the extended labor front, it appears that the national labor union moment is losing momentum. Members of works councils and employe representation pacts, encouraged and stimulated by the outcome of the Wagner bill hearings and further influenced by the spectacle of rivalry among outside labor organizations, are more than ever satisfied that the representation plans afford the most desirable agency for collective bargaining.

Production

STEELWORKS operations advanced 4 points to 55 per cent last week, with gains in all districts except the South. Pittsburgh was up 4 points to 43 per cent; Chicago 4 to 54; Youngstown 3 to 60, and eastern Pennsylvania 1½ to 40 per cent.

At Detroit the rate rose 12 points to 94 per cent; New England 11 to 89; Buffalo 7 to 57; Cleveland 5 to 74; Wheeling 4 to 73. Birmingham remained at 52 per cent, but is scheduled for 60 per cent this week. Gains also are definitely indicated this week in other districts, most important of which is Pittsburgh, scheduled for 45 per cent.

Pittsburgh—Advanced 4 points to 43 per cent, with a further increase to 45 per cent scheduled for this week. A leading producer averaged 45 per cent last week, and on several days was as high as 53 per cent. Several independents, with order backlogs mounting, show evidence of further operation gains here for at least several weeks to come.

Twenty-two out of 60 steelworks blast furnaces are still blowing in this district, and this number probably will be increased this week when Carnegie Steel Co. will add to its now active list of 9 out of 32. Other producers are operating as follows: Jones & Laughlin Steel Corp., 6 of 11; Bethlehem Steel Co., 4 of 7; and 1 of 2 each for Pittsburgh Crucible Steel Co., at Midland, Pa., Pittsburgh Steel Co., at Monessen, Pa., and American Steel & Wire Co., at Donora, Pa.

Wheeling—Increased 4 points last week to 73 per cent. Twenty-eight out of 39 open-hearth furnaces were in operation at four district plants here.

Buffalo—Up 7 points to 57 per cent last week, with the rate expected to increase to 60 per cent this week. Twenty-three out of 38 open hearths are scheduled for production, with prospect of their continuance for several weeks.

Detroit—Steel ingot production for the two district plants averaged 94 per cent last week, up 12 points. Sixteen out of 17 open-hearth furnaces were on, one large duplex furnace, and all four of the district's blast furnaces, two each for Hanna Furnace Corp. and Ford Motor Co. As soon as one inactive open-hearth furnace, which is down for relining, is placed in operation, this being expected sometime this week, district ingot operations will be at 100 per cent.

Central eastern seaboard—Up 1½ points to 40 per cent last week, the highest since last summer. A further slight expansion by the end of this week is indicated. At present some producers are drawing on ingot stocks, as a preliminary step to putting on more furnaces.

Birmingham—Unchanged at 52 per cent last week. Continued operation of Ensley works of Tennessee Coal, Iron & Railroad Co., including rail mill, calls for steady production of steel, and 13 open hearth-furnaces have been turning out ingots. Five to six additional open-hearth furnaces are in shape for immediate operation if there is need for increased ingot output.

NO PERMANENT or lasting
RELIEF from depression
ASSURED unless

CAPITAL assets and
WORKING capital
ARE protected by prices
and
PROFITS guaranteed that
WILL protect and pay
ACTUAL cash dividends to bond and stockholders.

—H. E. HUGHES, President, Continental Bridge Co., Chicago.

Chicago—Increased 4 points to 54 per cent last week, the highest rate in eight months. While a recession in operations had been anticipated, the recent volume of specifications has been such as to indicate a steady or expanding rate over the balance of the quarter. Eleven of 36 steelworks blast furnaces continue active.

Cleveland-Lorain—Up 5 points to 74 per cent, with Corrigan, McKinney Steel Co. last week operating 10 open hearths and getting two more ready for production this week; Otis Steel Co., operating 7 units, and National Tube Co., Lorain, O., 12.

Youngstown—Up 3 points to 60 per cent last week, with 51 out of 83 open hearths in operation. At least two more would be melting if not forced down for repairs.

New England—Advanced 11 points to 89 per cent, with the rate expected to hold at this level at the start of this week.

Sheet Output Gains in March

Steel sheet production in March averaged 7106 net tons daily, up from 6958 tons in February, according to the National Association of Flat Rolled Manufacturers, Pittsburgh. Shipments averaged 6476 tons, compared with 5246 tons in February, while sales were 5104 tons, down from 6584 tons in February.

Total production for March was 220,282 tons; shipments 200,701 tons; sales 158,244 tons. Unfilled tonnage as of April 1 was 159,672 tons, compared with 206,292 tons March 1. Total sheet capacity in the United States for March was approximately 550,000 tons, and the capacity on which the association's figures are based was 325,000 tons.

Institute

STEEL pipe and reinforcing bars were the major products on which new price postings were filed with the American Iron and Steel institute last week, to become effective this week.

Standard, line, water well and large outside diameter pipe was marked up 3½ points, or $7 a ton. The advance in oil country pipe ranges from $6 to $7 a ton. While some leading producers filed the new prices to become effective April 24, others will not put their new quotations in effect until April 27.

New billet steel reinforcing bars were advanced $3 a ton, the same increase as that recently made on merchant steel bars. Rail steel bars also are expected to be raised $3 a ton. The effective dates for the new billet reinforcing bar prices are April 24 and 25.

As noted in STEEL last week new wire and wire products prices were filed by some producers for April 12, but a counter filing by a leading interest effective April 20 reduced the amount of the increase on several items, including plain wire, now 2.30c, base, Pittsburgh; barbed wire, now 3.00c; and spring wire, now 3.20c.

The majority of price adjustments were completed last week.

Commercial Resolutions

Commercial resolutions have been adopted or amended recently as follows:

No. 25, amended April 12, extends the region to which the 45-day cash discount period on shipments from eastern plants to points west of the Mississippi may be applied. In addi-

tion to Pacific coast ports, all points in the states of California, Oregon and Washington, in the Panama Canal zone and Alaska are included —provided points or origin are east of the Mississippi.

No. 46, amended April 12, to expire May 31, establishes lump-sum extras on merchant steel bars for delivery in the states of California, Montana, New Mexico, Utah and Wyoming. The extra on quantities less than 2000 pounds, but not less than 1000 ponnds, is 25 cents per 100 pounds. The extra on quantities less than 1000 pounds is 50 cents per 100 pounds.

No. 55, effective April 19, extends to railroads, car builders and locomotive builders the jobbers' price on wrought iron pipe.

No. 56, effective April 19, is intended to meet the new condition by which certain ocean carriers have extended their rates from Atlantic to Pacific ports to include the new ports Stockton and Sacramento, Cal., created by the improvement of the Sacramento river. These ports now are included with the others enjoying the Pacific coast terminal rate from Atlantic ports.

No. 57, effective April 12, provides that defective and second grade steel products cannot be sold at the scrap price unless they are to be remelted. Prices higher than the scrap prices must be filed and quoted on seconds sold for other than melting scrap.

No. 58, effective April 12, makes it compulsory to quote freight rates as published in the Institute's Freight Tariff No. 2. This resolution provides that the quoting of any freight rate lower than shown in Freight Tariff No. 2 will be proof of violation of the code.

NRA

GENERAL JOHNSON on Friday was quoted as saying the basing point system in the steel code probably is wrong.

Walter S. Tower, executive secretary of the American Iron and Steel institute, General Counsel Moore of that organization and others appeare before the National Board of Review yesterday in defense of the steel code. They appeared in invitation of Clarence Darrow, chairman of the board, who has been asked by the president for a report on the steel code and its price, basing point and trade custom provisions.

Steel Plate Fabricating Code

NRA code for the steel plate fabricating industry, approved by President Roosevelt on April 6 and effective April 16, defines that industry as including the fabricating and/or selling, and/or erecting in the United States, exclusive of Alaska, Hawaii, Canal Zone and its other insular and maritime possessions, of:

(a) Field erected storage tanks for water, oil and other purposes.

(b) Shop built storage and pressure tanks (except refrigerant receptacles manufactured by a member of the refrigerating machinery industry or a corporation affiliated therewith) for water oil and other purposes except where standardized and shipped in finished conditions and/or sold from a published price list, and further excepting pressure and sump tanks for governing and control systems of water power plants when manufactured by a member of the water power equipment industry or a corporation affiliated therewith.

(c) Blast furnaces.

(d) Gas holders.

(e) Elevated steel tanks and supporting towers.

(f) Penstocks and pipe line construction and water pipe either riveted or welded, lockbar or seamless, either hot dipped vertically or specially coated, except feeder pipes and intake pipes, not exceeding 35 feet in length, furnished with the turbine as part of a water power installation and manufactured by the manufacturer of such turbine or a corporation affiliated therewith.

(g) Steel stacks.

(h) Miscellaneous sheet, plate and kindred work, not provided for in other codes . . . . "

The code provides for a maximum average work week of 40 hours in any four weeks period, but not more than 48 or more than six days in any week. The minimum wage is 40 cents per hour, except for Texas and Virginia at 35 cents and the remainder of the South at 30 cents. Office workers' wages are according to population, ranging from $15 to $12 per week.

Track Equipment Code

NRA code for the railroad special track equipment manufacturing industry, approved April 6, carries provisions in Article VII, section 2, pertaining to a waiting period of 10 days between the filing of prices and their effective date—a feature similar to the waiting period in the steel code. However, this provision is "stayed pending further order" by the administrator "either within a period of 60 days" or "after the completion of a study of open price associations now being conducted by NRA."

The code applies to Tee rail track work, switches, switch points, switch stands, ground throws, frogs, crossings, stock and special connecting rails, guard rails, guard rail clamps, bridge rails, and expansion joints, and repairs for these items.

Maximum hours are 40 per week and minimum wages are 40 cents per hour in the North and 32 cents in the South.

Public Hearings

Code hearings are scheduled as follows:

Wire reinforcement industry, Room 2062, Commerce building, Tuesday, May 1; electric overhead crane industry (sponsored by the Electric Overhead Crane institute) and locomotive appliance industry (sponsored by the Locomotive Appliance institute) on proposed codes supplementary to the code for the machinery and allied products industry, Raleigh hotel, Friday, April 27; stapling machine industry on amendments to code, Lee House, April 30; secondary steel products warehousing trade on proposed supplemental code sponsored by the National Association of Distributors of Secondary Steel Products, Raleigh hotel, April 28.

Change Shipbuilding Code

An NRA order modifying the code for the shipbuilding and ship repairing industry grants time and one half for work in excess of eight hours in any day.

Foreign Trade

BRITISH steelmakers doing export business with the United States are disturbed by the regulation effective May 9 compelling all imports into the United States to be marked with the name of the country of origin. The names England, Ireland, Scotland and Wales will no longer suffice, the full name required being the United Kingdom of Great Britain and northern Ireland. Material now in stock may have to be altered if the American government does not relent.

See Rise in Ore Imports

Imports of low phosphorus iron ore into the United States are expected to expand sharply as a result of improved demand for rails. Thus far in 1934 about 25,000 tons of this ore has been imported; in 1933 imports were negligible.

Drill Steel Market Shifts

South African market for drill steel is rapidly passing to the Union Steel Corp. now controlled by the state-aided South African Iron & Steel Corp., according to Trade Commissioner Edward B. Lawson, at Johannesburg. Consumption by the Witwatersrand mines alone is 6400 tons annually.

PWA

A CONTRACT has been signed whereby $1,400,000 has been advanced by PWA to the Chicago & North Western to pay for rails and fastenings purchased by it under an allotment for that purpose.

The road purchased 26,514 tons of rails 1460 tons of standard rail joints and 1066 pairs of insulated joints, 4000 tons of tie plates, 730 tons of spikes, 181 tons of track bolts, with 175,000 nutlocks, 320,000 rail anchors, 100 switches and 44,000 rail bonds.

PWA announces also that a contract has been signed with the Maine Central Railroad Co. for a work loan

of $313,000. Materials to be purchased will include 4200 tons of rails, costing $168,798, $105,147 worth of tie plates, spikes, joints and other fastenings, $18,900 worth of frogs and switches.

Interstate commerce commission has approved the proposals of several railroads to borrow funds from PWA for track and maintenance work: New York Central, $2,500,000 for purchase and installation of 37,000 tons of steel rails and track material. Baltimore & Ohio, to issue $4,500,000 of collateral notes to finance maintenance work. New York, Ontario & Western, $235,000 collateral notes to aid in financing maintenance work.

Meetings

A HEAVY convention schedule—sure sign of spring—again confronts industry. Problems connected with code administration vie with technical matters as the principal topics of discussion.

MAPI To Convene in Cleveland

Machinery and Allied Products institute announces a meeting of all manufacturers of machinery and machine parts to be held May 14-15, 1934, at Hotel Cleveland, Cleveland. The program includes a meeting of the institute, a meeting of the industry, subdivision and groups meetings and banquet. Plans for code activities for the coming year will be discussed.

National Metal Trades Program

The program of the 36th annual convention of the National Metal Trades association, to be held April 25 and 26 at the Waldorf-Astoria hotel, New York, embraces the following:

Wednesday morning: "The extension of Government Supervision of Business," Phil Hanna, editor, Chicago Journal of Commerce; "Legal Aspects of the Labor Relations Sections of NRA," David Clark, Illinois Manufacturers association.

Wednesday afternoon: "Economic Developments in United States and Foreign Countries Since Mid-Depression." Vaso Trivanovitch, National Industrial Conference board; "The Monetary Situation," Dr. Edward W. Kemmerer, Princeton university; "The Theory of Rodbertus and the NRA," J. D. Cox Jr., president, Cleveland Twist Drill Co.; "Social Insurance Legislation," Noel Sargent, National Association of Manufacturers.

Wednesday evening: Annual banquet, with Frank Kent, *Baltimore Sun*, speaking on "The Washington Picture."

Thursday morning: "Our Experience with Employe Representation," Charles R. Hook, president, American Rolling Mill Co.; "Employe Representation Under NRA," H. F. Brown, National Industrial Conference board; "Skilled Workers for the Future," George A. Seyler, the Lunkenheimer Co.; "Sound Economics Applied to NRA," Dr. Louis H. Haney, New York university.

WHAT IS WRONG HERE? How can one explain the anomaly of a modern steel derrick of structural steel associated with antique engine and boiler reminiscent of the oil boom period in Western Pennsylvania? The answer lies in the locale—Sussex, England, where interest in drilling has been revived by a recent discovery of oil. Therein is the explanation for this curious mixture of the old and new in drilling rig and power. Acme photo

Enamelers Assemble in May

Porcelain Enamel institute will hold its fourth annaul meeting at Hotel Statler, Cleveland, May 16-17, at which time new officers will be elected. Included in the topics and speakers will be "Architectural Uses of Porcelain Enamel," by Bennett Chapple, vice president, American Rolling Mill Co., Middletown, O.; "What the Public Does and Does Not Know About Porcelain Enamel," by William Hogenson, president, Chicago Vitreous Enamel Product Co., Chicago; "Development of a Technical Research and Educational Bureau," by E. L. Lasier, vice president and general manager, Titanium Alloy Mfg. Co., New York, and "Cooperative Advertising," by R. A. Weaver, president, Ferro Enamel Corp., Cleveland.

One item of business will be election of the porcelain enameling manufacturing industry's supplementary code authority which will be charged with administration and enforcement of the code of fair competition made effective April 10.

In connection with the meeting, plans are being made for a display of methods of attaching porcelain enameled units to the exteriors and interiors of houses and commercial structures. Headquarters of the institute are at 612 North Michigan avenue, Chicago.

Zinc Institute To Meet in St. Louis

American Zinc institute will conduct its sixteenth annual meeting at the Statler hotel, St. Louis, April 30-May 1. The program will include reports of officers, election of directors, discussions of the code and a review of zinc mining conditions. One session will be devoted to the institute's progress in its better galvanizing campaign; addresses to be presented at this session include "The Steel Man's Viewpoint of Better Galvanizing," by J. L. Schueler, Continental Steel Corp., and "The Consumer's Interest in Better Galvanizing," by Prof. H. W. Riley, New York State College of Agriculture.

To Resume Power Show

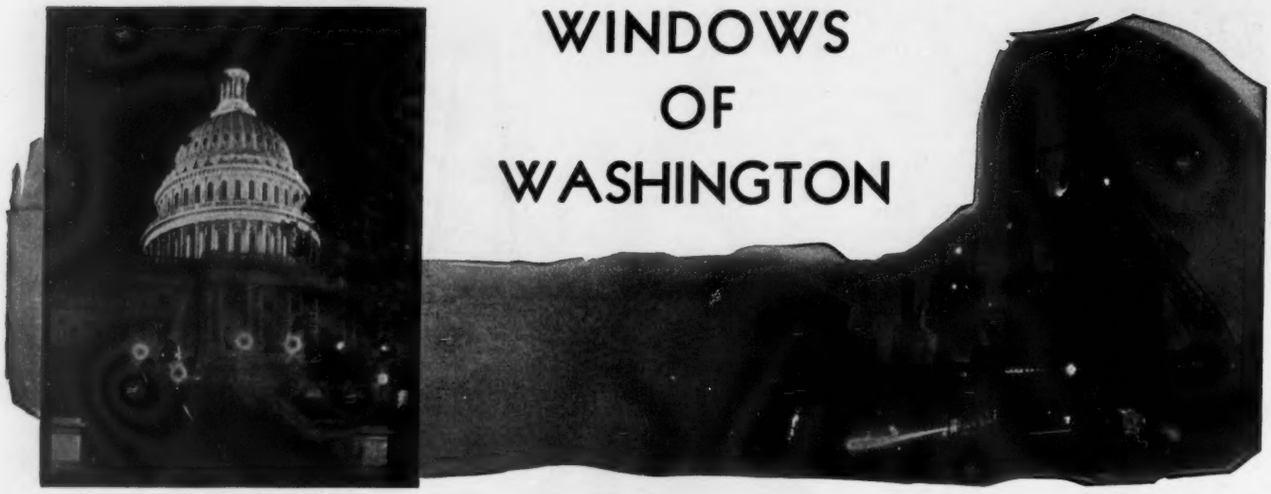
The 11th National Exposition of Power and Mechanical Engineering will be held Dec. 3 to 8, 1934, in Grand Central Palace, New York. The last exposition was held in 1932.

They Say:

TO DISCUSS the advisability of a 30-hour week to absorb the currently unemployed without an analysis to determine the age, sex or marital condition of those to be benefited is to compound ignorance with lack of vision . . . But this is the time to remove the obstacles that prevent the flow of long-term capital into productive facilities, and to encourage improvement of the national industrial plant. . . That is the job ahead for machinery, and the sooner it is permitted to attack the job the better for the nation."—Allen W. Rucker, in collaboration with N. W. Pickering, president, Farrel-Birmingham Co. Inc., Ansonia, Conn.

¶"The drastic provisions of the Se-

(*Please turn to Page 67*)



WINDOWS OF WASHINGTON

Consider Permanent Policies
• • •
Assessing for Code Costs
• • •
Boulder Dam Work Heavy

WASHINGTON

NOW that business recovery is accepted by the administration as definitely assured, broad policies are in formulation here. Based on the belief that the emergency period is coming rapidly to an end, these policies are intended as permanent ones for controlling the country's complex business and industrial activities in the future.

Proceeding with caution, the President is withholding his full hand. He has let it be known in unmistakable language that he wants congress to adjourn as near to May 15 as possible. To make this possible he has indicated that much of the original legislative program may be jettisoned.

Among measures slated to be passed are a stock exchange regulation bill, with the President insisting on more definite margin requirements than contained in the much-modified Fletcher-Rayburn bill. An amendment to remove some of the objectionable features of the securities act is also a "must" item.

While the Connery 30-hour bill appears thoroughly in the discard, it is too early to predict the eventual fate of the Wagner bill. In its original form this bill appears as good as killed. But the President appears insistent on a labor bill in some form, and this will depend on the outcome of conferences on this subject with a group including Senator Wagner, Miss Perkins, General Johnson and Donald Richberg. It is said that Mr. Richberg has set up a bill omitting some of the objectionable features of the Wagner bill, but providing for control over employer-employe relationships and setting up a permanent labor court with power to adjudicate labor troubles.

NO HINT whatever has yet been given by the President as to what action he will take in the settlement of vital questions under NRA codification of industry. In the warfare between General Johnson and the federal trade commission the President is distinctly neutral.

It is regarded as likely, as soon as the legislative program has been worked out with congressional leaders, that the President will announce his position with respect to open prices, basing points and trade customs as embodied in the steel code. Having received a report on open prices from the committtee of four cabinet members, and having had a report from General Johnson on this subject, it is probable that the present uncertainties in regard to open prices under the codes will have been clarified by the President within the next week or two.

A HORNET'S nest has been stirred up over the registration provision of the NRA code covering the trucking industry. A hearing on Wednesday, presided over by Assistant Deputy Administrator C. Dearing, was by far the stormiest so far held by NRA. Criticisms voiced at this hearing were of an unusually acrimonious character. NRA was held by some critics to have been guilty of unfair and discriminatory tactics.

By this provision, all truck owners, aside from farmers, were to be assessed in the interest of the trucking code authority. The hearing on Wednesday was on the proposal to charge $3 per truck for the registration of trucks for hire, and 90 cents on trucks not for hire. The protests were from representatives of owners of not-for-hire trucks, who stated there are approximately 1,500,000 of these and that registration at 90 cents each would come to $1,350,000 a year. This was held to be an unwarranted assessment on owners of not-for-hire trucks, all of whom are supporting the administration of codes in their respective industries. The proposed registration charge on for-hire trucks is $3, so that, on the basis of 1,000,000 of these for-hire trucks, the trucking code authority would be in receipt of a total income for code administration of about $4,350,000 a year!

Foremost among the opponents were representatives of the Machinery and Allied Products institute, the National Electrical Manufacturers association and the farm equipment industry. Their members support their own codes, they said, and do not engage in the trucking business per se. They objected not only to the registration charge but also to the provision which would force all truck owners to submit a report on each load to the trucking code authority. The hearing was adjourned and NRA will study the testimony and later announce a decision.

This situation is of unusual interest in that General Johnson, on April 14, following a Presidential order giving the general control over all assessments by code authorities, issued detailed orders covering code assessments. This order provided that "no member of any trade or industry shall be deemed in violation of a code for failure to contribute to the expense of administration of the code for any trade or industry other than for that trade or industry which embraces his principal line of business, subject to such exception as NRA may provide."

THE durable goods industries committee appointed by General Johnson, has about completed a report and, after final consideration by this committee on Tuesday, will be submitted to the general. Either this report or a later one by this committee will be devoted to the extent to which codes overlap, contradict and interfere with each other. This re-

port is expected to be important in view of the many perplexities existing in industry as a result of overlapping of codes.

The durable goods committee finds that, aside from the effects of governmental buying, very little improvement has been noted. This committee takes the firm attitude that before the situation in durable goods can be improved by private buying it will be necessary to amend the securities act of 1933 so as to permit financing of industry.

Having an important bearing on the situation in durable goods, the subject of providing loans to industry is a live one. Indications are that the President favors the plan of Senator Glass to empower federal reserve banks to make 5-year loans to going industries. The durable goods industry also will be assisted by the government housing program slated to be placed in the hands of General Johnson at an early date.

ONE of the most important rulings Washington has had handed down in some time will increase tremendously the work of all manufacturers interested in selling materials to contractors who obtain government PWA-financed work. This ruling reads:

"Every contractor who bids upon a project financed in whole or in part by funds from the public works administration, shall submit in a sealed envelope with his bid to the contracting officer the names of all subcontractors and their bids upon which his bid is based. The sealed envelope so submitted shall have on it the name of the contractor with the words 'Bids of Subcontractors'. Such submission shall be deemed to constitute an acceptance by the contractor, if awarded the contract, of the bid of each subcontractor. Any alteration therein, after the award of the contract, shall be subject to the approval of the contracting officer of the federal department or agency concerned."

Whether or not this ruling also will be applied to contracts placed by private parties or corporations under PWA loans has not yet developed.

Behind this ruling is an interesting story. When the federal building program was expanded to assist in overcoming the depression, certain companies were organized to exploit these government jobs. They put in bids, but with no thought of doing the jobs themselves. When they got a contract, they would shop it around among the steel fabricators and other subcontractors and play one against another. Eventually the job would be so distributed that the contractor made a big profit while the subcontractors took heavy losses. Two or three bills against the practices of these "bid-brokers" were introduced in congress. One of these, the Goss bill, was voted down Feb. 7, 1933. While the situation under NRA has changed materially, there still is a possibility for these bid-brokers in that certain industries are not yet under codes; for instance, the structural steel fabricators.

ANOTHER ruling, by Comptroller General McCarl, provides that a code violator, in bidding to the government, will be forced to pay a virtual fine equivalent to the difference between his bid and a correct bid under an NRA code. While President Roosevelt recently ordered that all bidders on government work must comply with NRA codes, the comptroller general finds that government departments still are obligated by law to buy at the lowest bid price. If bidders protest an award on the ground the successful bidder violated a code, the protests will be referred to NRA and if that body rules the protests justified, the award will be cancelled and given to another bidder and the code violator be made to pay the difference.

This is especially interesting to steel companies, some of which have made honest mistakes. There was a case of a cash discount, for instance. The steel code provides that on government jobs the discount is ½ of 1 per cent for cash in 10 days after receipt of the material, the discount to be figured on the value of the material at basing point. The steel company bid allowed the discount but did not stipulate the basing point. The particular government department held its custom was to figure the discount on the basis of the delivered value and it placed the contract on this basis. This, of course, is a violation, and under the new ruling not only would result in the loss of the business but also in the exaction of a fine.

FOLLOWING are the manufacturers of electrical household appliances whose products to date have been approved by Electric Home & Farm Authority: Estate Stove Co., Hamilton, O.; A-B Stove Co., Battle Creek, Mich.; Landers, Frary & Clark, New Britain, Conn.; A. J. Lindemann & Hoverson Co., Milwaukee; Edison General Electric Appliance Co., New York; Westinghouse Electric & Mfg. Co., New York; Cleveland Heater Co., Cleveland; Hynes & Cox Electric Corp., Albany, N. Y.; McGraw Electric Co., Chicago; Malleable Iron Range Co., Beaver Dam, Wis.; and Kelvinator Corp., Detroit. Electric refrigerator manufacturers with which EHFA is working include Gibson Electric Refrigerator Corp., Frigidaire Sales Corp., Starr Co., Leonard Refrigerator Co. and Crosley Radio Corp. On electric ranges and heaters it also is working with Walker & Pratt Mfg. Co. EHFA also is working similarly with manufacturers of electric water heaters and electric pumps. The latter is the appliance subsidiary of the Tennessee Valley authority and now has headquarters at Nashville, Tenn., but will move to Chattanooga about May 1. The first demonstration and offering for sale of EHFA—approved electrical appliances now is being staged at Tupelo, Miss.

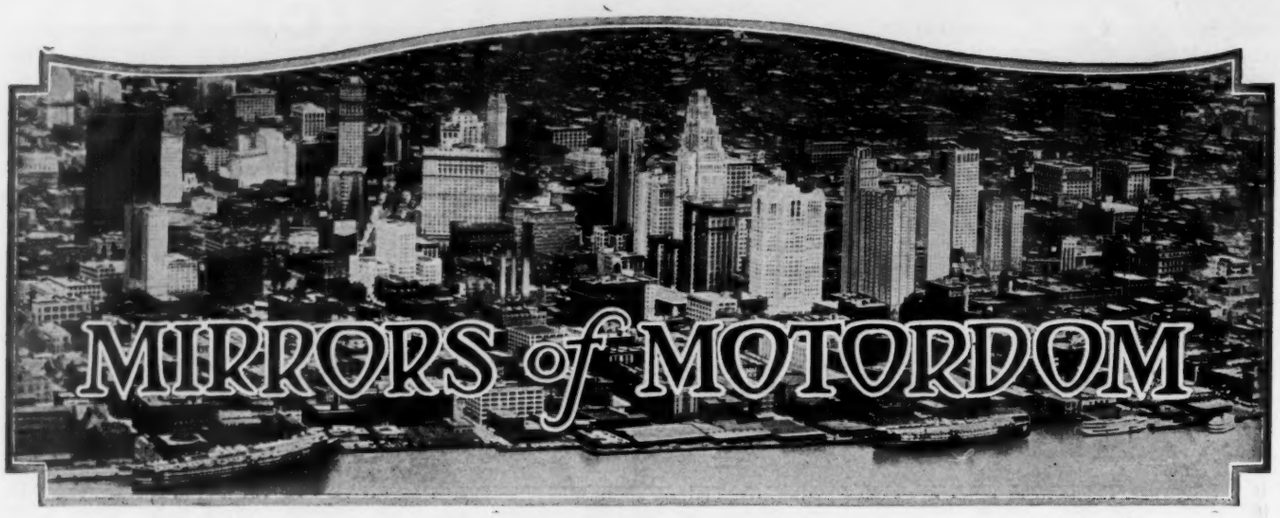
STEEL castings won out against welded steel when the Hardie-Tynes Mfg. Co., Birmingham, took the contract for twelve 84-inch needle valves for Boulder dam. At the same time Hardie-Tynes booked the twelve 96-inch emergency gates for the same project. This contractor bid $228,500 on the emergency gates, $273,000 on needle valves with cast steel and $278,000 on needle valves with welded steel bodies and nozzles. It put in a combination bid of $500,000 if the valves were to be cast and $506,000 if they were to be welded. The $500,000 bid was accepted.

This contract is an interesting one. Total weight of the gates will be 2,045,000 pounds. Total weight of the valves is to be 1,840,000 pounds. The needle valves are to be used for regulating discharge of water from the Boulder dam reservoir. The emergency gates will be for protection, inspection and maintenance of needle valves.

Materials going into the needle valves include cast steel, rolled steel plates, rolled and cast bronze, cast manganese bronze, stainless steel, high tensile cast bronze, semisteel, monel metal, stainless steel tubing, spring brass wire, tool steel, steel bolts, soft copper gaskets. The emergency gates are to be of cast steel, semisteel, rolled bronze, babbitt, stainless steel, cast manganese bronze, monel metal, bronze washers, brass shims, cast bronze, spring steel, high tensile rolled bronze, steel bolts.

THE Grand Coulee dam, in the Columbia river basin, Washington, a project of practically the same proportions as Boulder dam, is expected to be under contract by some time in June. This will be a labor contract. The bureau of reclamation later will award the pipes, gates, valves, upstream plugs, trash racks and other steel and fabricated structures.

It is expected the Seminole dam in Wyoming and the Parker dam on the Colorado river will have been awarded by the middle of July at the latest. Both are power projects. There are a number of additional dams, but mostly of earthwork. It now is expected the bureau of Indian affairs also will authorize construction of several dams and power plants. All of these projects will be executed by the bureau of reclamation from its Denver office.



Labor Storms Less Violent
De-seasonalizing Is in View
Big Three Parry For Lead

DETROIT

STRIKE agitation in the automobile industry is waning, having weakened itself, is the consensus of opinion in Detroit. True, there still remain numerous sore spots, of which the Pontiac district is outstanding. Also the Mechanics Educational Society of America—the tool and die union—is trying hard to impress the world with its importance. The auto labor problem is not solved, but striking labor has lost some face.

Detroit believes that last week the unions very definitely were forced back into their second-line trenches, relinquishing the front line. By this act, the unions turned from offense to defense. Public opinion has veered strongly against union agitation, at least locally. Eight-column newspaper streamers in Detroit last week advised in bold type, with accompanying editorial counsel, "Hold Your Job!"

Little wonder then that the closely-knit MESA, which is Rooseveltian for Mechanic's Educational Society of America, tempted only a few of its working members to strike last week. Some 5000 of them met Monday night and Tuesday in Detroit, but striking subsequently was desultory.

DETROIT, too, pointed to an unmistakable move to professional jealousy among the unions on April 15. Meeting at Pontiac on that Sunday afternoon, 500 officers and departmental representatives of midwest automobile unions, mainly the American Federation of Labor, took a left-handed pass at their union compatriots, the MESA, by indorsing the automobile labor board and at the same time stating that they intended to stick to peaceful means in pressing their demands. Everyone knew that MESA was not indorsing the automobile labor board nor was it peacefully pressing its demands.

Into this picture marched the automobile labor board. Early in the week it encamped at Detroit and started the machinery for collective bargaining in 10 large automotive factories in Michigan. On last Monday, however, Dr. Leo Wolman took time out to offer his preliminary overture on the solution of a problem which Detroit knows full well it must some day solve.

That is the "de-seasonalizing" of the industry—the leveling of the peaks and valleys in production—and the problem of migratory labor.

Speaking boldly, Dr. Wolman would eliminate the spring shows and establish progressive prices on automobiles, the latter to encourage buying in the summer and fall and to discourage buying in the normally active spring.

Though the drawbacks to these plans are obvious, mainly because the industry could not be trusted to act together uniformly, almost everyone agrees that Dr. Wolman is on the right track.

There never was any need for a motor plant running three shifts a day for a few months and then limping along on one shift the rest of the year. The patient has to have some of his spring fever taken out of him. Perhaps building up banks of parts in the dull months would help.

CHEVROLET'S recent performance in production certainly rates mention. That manufacturer, of all of the volume producers, started off 1934 hugging scratch and closest, shook off a bad headache from a tangled maze of production problems through January, yet all the while held its competitors at bay.

While it still is news that Chevrolet assemblies in March numbered more than 110,000 cars, every indication now points not only to a better showing in April, but to as good if not a better sum total for May.

Barring the unforeseen, April for this General Motors division will top 100,000 cars, and should reach up to 115,000, maybe 120,000 models. Translated, this means that over 210 complete Chevrolets an hour are rolling off the lines. Last week 26,012 cars were made in five days. That is stretching capacity.

CREDIT Chevrolet, too, with something of a clever move right now on the standard six, which is being baptized. Detroit, reading behind the recent introduction of this model, reasons somewhat this way: Chevrolet groomed the standard last year for fleet sales. Owing to a lack of sales push and an ineptitude on the part of dealers, it did not sell in volume; nevertheless it was not discontinued. Detroit now puts the pieces together to say that this model was held back as an ace card, for just what ultimately happened.

Chevrolet concentrated early this year on the master six, which has sold and is still selling surprisingly well. But Ford seized an advantage two weeks ago, when, out of the clear blue, he publicized widely no price advance against Chevrolet's advance.

Then, out of its own bag Chevrolet pulled a trick, revived the standard, and threw that model into the breach. It cannot be denied that the cheaper standard line will be a bulwark, matching Ford competition through the fag-end of the spring buying and into the summer.

Because there were only some 3000 standards in the field ten days ago—and many of these even had been sold by dealers who broke release dates—a larger share of Chevrolet's output of 5000 and more cars per day are now standards, and probably will be for a time to come.

Chevrolet simply has capitalized quickly on an opportunity. It was

(*Please turn to Page* 18)

Industrial Men in the Day's News

Everett Chapman, Vice President, Lukenweld Inc., Division of Lukens Steel Co.

Only 33, nevertheless he is one of the pioneers in the field of welded steel design and construction.

He developed welded steel diesel crankcases for two of the new high-speed streamlined trains.

His work on stress distribution in welded joints and photoelastic model testing has become well known.

EVERETT CHAPMAN, recently appointed vice president of Lukenweld Inc., division of Lukens Steel Company, Coatesville, Pa., was born in Detroit, May 9, 1901. He attended grade school and high school there and later was employed by Detroit Testing Laboratories.

In 1919 he entered the University of Michigan, Ann Arbor, Mich., and was graduated in 1923 with a degree of bachelor of science in electrical engineering.

He pursued a year's graduate work in physics, his senior thesis dealing with electrical vibration of high frequencies, and gaining him the degree of master of science. He then became instructor in electrical engineering at Purdue university, Lafayette, Ind.

In 1925 he joined the Lincoln Electric Co., Cleveland, in the capacity of experimental engineer. Here he was responsible for the development of the "electronic tornado" system of automatic arc welding, electric control apparatus for motors, and general work on arc welding.

In 1930 he became associated with Lukenweld Inc., as director of development and research. He served in that capacity until his recent appointment as vice president.

At Lukenweld, Mr. Chapman has been credited with responsibility for that organization's achievements in the application of welded construction to dynamically loaded, light weight structures such as press frames, diesel engine crankcases, railway trucks and underframes, gun mounts, as well as general industrial equipment such as lathe beds, planer parts, steel mill equipment, marine turbine gear cases and marine hoisting equipment.

He designed the crankcase used in the diesel engine which powers the Union Pacific's high-speed streamlined passenger train, as well as the crankcase of the full-diesel engine which is used on the latest of the high-speed streamlined trains, the "Zephyr" of the Chicago, Burlington & Quincy railroad. Incidentally, the latter, on its first official run, attained speed of 104 m.p.h. (see p. 10).

Because of the fact that the success of welded steel construction revolves around the success of the welded joint itself, Mr. Chapman has made extensive studies of stress distribution and metallurgical conditions around the welded joint. In this work, photoelastic model testing has played an important part and his papers delivered on this subject before various engineering and industrial groups have appeared in STEEL on various occasions.

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Olaf Laurgaard, former city engineer for Portland, Oreg., has been appointed construction engineer of the Parker dam project on the Colorado river, under direction of the bureau of reclamation.

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Thomas R. Fitzpatrick, formerly coal freight agent for the Pittsburgh & Lake Erie railroad, has been appointed freight traffic manager, succeeding the late J. B. Nessle whose death was noted in STEEL for April 16.

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Frank Cary has been appointed to the sales engineering staff of Austin-Hastings Co. Inc., Parkett machinery division, Cambridge, Mass. He will represent the company in Connecticut and western Massachusetts in the sale of metalworking machinery and machine tools.

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A. W. Robertson, chairman of the board, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been elected a director of the Westinghouse Air Brake Co., Wilmerding, Pa., and the Union Switch & Signal Co., Swissvale, Pa., to fill a vacancy caused by the death of H. H. Westinghouse.

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Prof. Melvin L. Enger, member of the faculty of the University of Illinois, Urbana, Ill., since 1907, and head of its department of theoretical and applied mechanics since 1926, has been named dean of the college of engineering and director of the engineering experiment station of the university. Prof. Enger has conducted extensive research into the physical properties of cast iron pipe.

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Otto Mueller, stamping engineer, has been appointed head of the newly created engineering and research department at the frame plant of the Murray Corp. of America, Ecorse, Mich. Educated in Germany, he came to this country in 1923 and has been with Murray since 1932. In his new capacity he will serve as consultant on frame and heavy stamping problems.

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Earl Wedlake, purchasing agent and production manager for the Acme Machine Products Co., Indianapolis, for the past year, has been appointed to the general sales staff of Union Drawn Steel Co., Massillon, O. He will be assigned later to one of the company's district sales offices. For over 20 years he was associated with the Warner Gear Co., Muncie, Ind., and the Muncie Products Co.

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F. G. Guthrie is now associated with R. L. Gomon at 2842 West Grand boulevard, Detroit, to represent the Electric Machinery Mfg. Co., Minneapolis, in the eastern Michigan territory. The company specializes in electrical equipment for the automotive industry. Mr. Guthrie for the past seven years has been associated with the Detroit office of Westinghouse Electric & Mfg. Co.

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George A. Neesham, Wyckoff Drawn Steel Co., has been elected

president of the Purchasing Agents Association of Chicago. Other new officers include: First vice president, George Birkenstein, S. Birkenstein & Sons Inc.; second vice president, John H. Mohr, John Mohr & Sons; national director, E. L. Van Vechten, United Air Lines Inc.; and secretary, Frederick J. Heaslip, Fairbanks, Morse & Co.

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John G. Ross, Formerly New England representative of the Reading Iron Co., Reading, Pa., is now affiliated with the Boston sales office of Republic Steel Corp., with headquarters in the Consolidated building.

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Arthur T. Dalton, formerly manager of the Detroit branch of the Chicago Wheel & Mfg. Co., Chicago, manufacturer of grinding wheels, has been named secretary of the company to succeed the late E. H. Bruner. Prior to his association with the Chicago company, Mr. Dalton was for six years representative of the Norton Co. in the Detroit territory.

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J. E. Walton, purchasing agent, Heppenstall Co., Pittsburgh, has been elected president of the Purchasing Agents' Association of Pittsburgh.

Albion Bindley, purchasing agent, Pittsburgh Steel Co., was appointed vice president and A. D. Feeman, Superior Steel Co., secretary. E. C. Buerkle, National Bearing Metals Corp., Pittsburgh, was elected treasurer.

The following were elected directors for a two-year term: J. B. Connally, Mesta Machine Co.; T. D. Jolly, Aluminum Co. of America; R. D. King, Koppers Co.; R. L. Walliser, Allis-Chalmers Co.; and J. M. Knowles, Consolidation Coal Co.

R. W. Mackensen, Pittsburgh Coal Co., was elected national director.

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E. J. Paulus has been elected vice president in charge of operations of the McClintic-Marshall Corp., Bethlehem, Pa., succeeding the late Col. E. A. Gibbs. Mr. Paulus was formerly manager of the Chicago district for McClintic-Marshall and has been with the corporation during his entire business career. Since 1911 he has been, successively, draftsman, junior engineer, assistant Chicago district sales manager, assistant manager of the Rankin works, in charge of structural shop at Leetsdale, in charge of sales at Detroit, engineer of construction on the Detroit river bridge and in 1928 manager of sales and operations at Chicago. His headquarters will be at Bethlehem.

Robert MacMinn has been appointed manager of the Chicago district, in charge of sales and operations, succeeding Mr. Paulus. Mr. MacMinn has been with McClintic-Marshall since 1907 and since 1930 has been manager of the eastern district.

E. J. Paulus

In 1927 he was placed in charge of preliminary work on the George Washington bridge, and in 1928 succeeded Mr. Paulus in charge of construction on the Detroit river bridge.

Died:

ALFRED J. JUPP, 58, vice president of Lukenheimer Co., Cincinnati, in New York, April 10, while on a business trip there. He was active in the Manufacturers' Standardization society and also contributed much of his time in recent months to code work in the valve and fittings industry.

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Ray O. Weldgen, 38, metallurgist for the Universal Products Co. Inc., Detroit, at a Detroit hospital, April 15, after an illness of five weeks.

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Edward B. Holmes, 62, president of the E. & B. Holmes Machinery Co., Buffalo, in that city, April 13. He was also a director of the Simonds-White Tool Co., Toledo, O.

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Cass E. Herrington, 77, from 1901 to 1919 director, member of the executive committee and general counsel, successively, for the Colorado Fuel & Iron Co., Denver, in that city, April 9.

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Howard N. Weiger, construction engineer for the Minneapolis Steel & Machinery division of the Minneapolis-Moline Power Implement Co., in Minneapolis, April 9, after a four-month illness.

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Clement A. Hardy, 80, formerly sales manager for the Whiting Corp., Harvey, Ill., and well known in the foundry industry as a consulting engineer, at his home in Chicago, April 15. He left Whiting Corp. in 1918 to form his own consulting company but rejoined the former several years later to do special sales work. He retired in 1932.

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John A. Glass, former vice president of the National Supply Co., Torrance, Calif., in Los Angeles, April 5. For ten years he was manager of the National Supply Co.'s plant at Toledo, O.

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E. H. Bruner, 61, secretary of the Chicago Wheel & Mfg. Co., in Chicago, recently. He was first associated with the company in 1896, four years later being made secretary.

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Albert J. O'Brien, 46, president of the Pacific Coast Forge Co., Seattle, in San Francisco, April 9, while on a business trip there. From 1908 to 1916 he was associated with the Pacific Car & Foundry Co.

Mirrors of Motordom

(*Concluded from Page* 16)

alert to see that there were still many who, being slow converts, preferred conventional I-beam front axles, that cheaper transportation still had its appeal, and that the Americon public always wants something new.

In the meantime, the pressure to keep up 5000 or more assemblies daily has forced Chevrolet to farm out some parts work which up until now had been produced within its own plants. For instance, the gear and axle plant in Detroit, all of its 100-odd hammers going at capacity, recently has been subletting forging work.

NOT to be outdone, Ford and Plymouth are right at Chevrolet's heels. Ford, if truth were told, is proportionately farther behind on retail orders than any of the big little three, in spite of the handicap of part of its dealer organization. Reports from many districts say the Ford car is actually selling itself, and that Ford capitalized to no small degree on his stand-pat price policy. While it may not touch 100,000 assemblies this month, the Ford rate last week went as high as 4500 jobs daily. Nearer 4000 daily was the average, however. This means an 85,000-car month in April.

To the detriment of outside steel suppliers, Ford now is operating all nine of its open hearths, the large duplex, both blast furnaces, and is rolling heavy tonnages of bars. Judging from several casting sub-contracts let last week, work on the continuous mill at Fordson is proceeding.

Here and There in Industry

BAUER-WILSON & CO., Chicago, have been appointed exclusive sales agents in Chicago, Milwaukee and territory west of there for the silvery and bessemer ferrosilicon pig iron produced by the Hanna Furnace Corp., Buffalo. Stocks are carried in Chicago, Detroit and at the furnace in Buffalo. E. & G. Brooke Iron Co., Birdsboro, Pa., also has made exclusive sales agreements with Bauer-Wilson & Co. for the sale of its special low phosphorus .035 pig iron in Michigan, Illinois, Indiana, Wisconsin and Iowa.

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A. C. Draft, ferroalloys, tin and scrap, Pittsburgh, has moved from 1010 to 603 Liberty-Ninth building, Pittsburgh.

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Kari-Keen Mfg. Co., Sioux City, Iowa, recently reorganized and placed in production, has made a shipment of five carloads of automobile luggage trunks to western cities.

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Stephens-Adamson Mfg. Co., Aurora, Ill., manufacturer of conveyors, has opened sales-engineering offices at Pittsburgh and Huntington, W. Va. The Pittsburgh office is at 1206 Gulf building, in charge of Harry W. Banbury. D. W. Allen is in charge at Huntington.

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Time-O-Stat Controls Co., Elkhart, Ind., will reopen its idle plant at Elkhart on a limited scale after being closed more than a year. This company was absorbed by the Minneapolis-Honeywell Regulator Co., Minneapolis, in 1931. Production will be increased as orders warrant.

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Republic Steel Corp., Youngstown, O., has appointed Gate City Iron Works Co., Omaha, Nebr., and Earle M. Jorgerson, Los Angeles, distributors for Enduro stainless steel. With these appointments 41 distributor warehouse stocks of this steel have been established in principal cities.

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Marr-Galbreath Machinery Co., now located at 58 Water street, Pittsburgh, will move to 55 Water street about May 1, where larger quarters will be available. Electric cranes are being installed to handle machinery and much better display space is provided. The company was organized in 1923 and has grown steadily.

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Rieke Metal Products Corp., Auburn, Ind., has made arrangements for construction of a plant at Barcelona, Spain, to be in operation by July 15. This plant will manufacture plug closures for metal barrels and drums, such as used by oil companies. Contacts are also being made with manufacturers in France, Germany, England and Belgium.

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Hart-Parr tractor plant of the Oliver Farm Equipment Co., Charles City, Iowa, shipped 20 tractors last week to Rome, Italy, and three to Brisbane, Australia. A recent shipment of tractors was sent to Lisbon, Portugal.

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Waukesha Motor Co., Waukesha, Wis., recently put in effect a voluntary increase of 10 per cent in wages for all factory and office workers, numbering 825. This adds $7000 monthly to the payroll. The rate now is within 6 per cent of the average for 1929.

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Diamond Iron Works, Second street and Eighteenth avenue, North, Minneapolis, manufacturer of rock-crushing and gravel-screening equipment, has given its 150 employes a wage increase of 10 per cent, bringing the scale practically to the 1929 level.

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T. J. Murray, Springfield, Mass., has been awarded the contract for the chromium plating of the exterior of Browning machine gun barrels, except for threads, Springfield armory, at $1.50 each. It is estimated that approximately 1100 barrels will be included in the contract, covering the period ending June 30.

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Cooley Electric Furnace Co., Indianapolis, has been appointed exclusive licensee of Wild-Barfield Electric Furnaces Ltd., London, for the manufacture and sale of its patented forced air circulation tempering furnaces and automatic charge progress recording process of tempering steel. In this country these furnaces will be equipped with the Doreco heating element.

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M. A. Hanna Coal & Dock Co., Cleveland, has bought the Ford coal dock at Thirty-seventh avenue West and the St. Louis bayfront at Duluth, and will assume control May 1. This is one of the largest docks on the upper lakes, with capacity for 550,000 tons. Its equipment will unload 600 tons an hour from a ship and 50 cars can be loaded daily. Trackage is sufficient for 75 cars. The dock is 2368 feet in length.

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Universal Power Shovel Co., West Allis, Wis., is being reorganized, creditors taking stock in the Unit Corp. of America in full payment of claims, the circuit court at Milwaukee approving. Unit Corp., manufacturer of automobile and tractor parts and forgings, absorbed the Universal company, then situated in Detroit, about three years ago. Since then both have been placed in receivership.

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Theodore H. Sloan & Associates, Charleroi, Pa., has been formed to provide engineering service in building and operation of industrial plants. Mr. Sloan was previously with Western Electric Co. in the development of sheet metal fabricating tools and electric welding and later assistant chief engineer of the Singer Mfg. Co. Among associates with Mr. Sloan is C. E. Frazier, president of Simplex Engineering Co., Washington, Pa., who since 1909 has been actively engaged as a specialist on engineering problems in the glass industry.

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Superheater Co., New York, has appointed of its agents who have been selling stationary superheaters, economizers, furnace water walls and other steam plant equipment to sell also the Ljungstrom air preheaters, including the following: Combustion Equipment Co., 1820 Cherry street, Kansas City, Mo.; F. J. Hearty, 74 New Montgomery street, San Francisco; Walter Castanedo Inc., 329 Balter building, New Orleans; J. W. Eshelman, 908 Martin building, Birmingham, Ala.; J. S. Cothran, 909 Commercial Bank building, Charlotte, N. C.; Rees V. Downs, 422 Exchange building, Memphis, Tenn.; Haylett O'Neill, 1507 Post Dispatch building, Houston, Tex.; Joy & Cox Inc., 1940 Blake street, Denver. R. E. Chase & Co., 3322 White-Henry-Stuart building, Seattle, and 503 Tacoma building, Tacoma, Wash., sales agents for the Air Preheater Corp., have been appointed sales agents for the Superheater Co. for Elesco steam plant equipment.

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Ingersoll Steel & Disc Co., a division of the Borg-Warner Corp., Chicago, with plants at West Pullman, Ill., and Newcastle, Ind., is celebrating its fiftieth anniversary in 1934. It was formed in 1884 at Sandoval, Ill., as the Sandoval Mfg. Co. by Stephen A. Ingersoll and through several changes of name has been in active production for the half-century. In the manufacture of coulter discs and other discs for agricultural implements the company's production of laminated and stainless-clad steels became an important part of its activities and the company entered the automotive parts field. R. C. Ingersoll, eldest son of the founder, is president, and his two brothers, Harold G. Ingersoll and Stephen L. Ingersoll, are vice presidents. Early this year a countrywide sales and service organization was developed with representatives in Milwaukee, Duluth, St. Paul, Minneapolis, San Francisco, Los Angeles, New Orleans, Detroit, Cleveland, Philadelphia, New York and Buenos Ayres.

EDITORIAL

Who Can Say That War Is "Profitable" To Industry?

POSSIBLY because the outbreak of the world war occurred 20 years ago this month, much is being said and written of the relation of industry to martial conflict between nations.

Recently one of the monthly national publications carried a comprehensive article on the large armament and munitions companies of the world, with the implication that some of them—particularly in Europe—exert an undue influence upon the shaping of events which lead to war. The point is made that the armament business is international—that often the soldiers of a given country are mowed down by guns which its own ordnance manufacturers have sold to its enemies.

A few days ago a United States senator gave out figures on the war profits of a few large corporations, including steel companies. In showing the extent to which wartime profits exceeded the earnings of normal years, the senator hoped to show the need of guarding against profiteering in time of war and to protect against this contingency in framing tax legislation.

Also there are occasional articles and addresses in which the authors seek to give the impression that industries which participate in war work are unduly active in promoting the expansion of armies and navies. In fact, the utterances of some politicians and of certain pacifists would lead one to believe that steelmakers and manufacturers constantly are hoping that a war will break out in order to fill their order books with profitable business.

"Easy" War Profits Are Not Exclusive To Iron, Steel and Metalworking Industries

Such insinuations are harmful in that they tend to implant dangerous fallacies in the public mind. For instance it is unfair to imply that steelmakers, machinery and equipment manufacturers, and shipbuilders are the preferred beneficiaries of war work. In the world war, the entire resources of the nation were called upon to their utmost capacity. Clothing, food, cigarettes, matches, shoes—even amusements—were in greater demand than in normal times, and the makers of these products or the providers of services were as much exposed to the opportunity for profits as were the makers of guns and ships.

Another national fallacy is that industry regards war work as profitable business. It is conceivable that contracts for a distant, localized war—as for instance the Russian-Japanese scrap of 1904—would be profitable to the companies of a non-combatant nation. But in any conflict involving several first rank powers, the chance for real net profits is negligible. The apparent big profits of the moment are more than offset by the losses incurred in the readjustments which follow after the armistice.

This has been demonstrated forcibly by the world war. The profits of 1918, 1919 and 1920, which horrify the lay mind, are but a drop in the bucket to the price which has been paid for the folly of that war. This is true of nations and of individuals, and it is true of companies.

Drain of Postwar Adjustments More Than Wipes Out Quick, Apparent Profits

Any company which recorded large apparent profits 20 years ago has far more than dissipated those profits in deficits in 1921 and in the present depression, and in increased taxes. It still faces additional payment for the spree of 1929, which was but a phase of postwar adjustment. Not until the final cost has been reckoned some decades in the future, will nations, individuals or companies know how much they lost due to the war.

Let him who talks about the "profits" of war contemplate the following from the report of the director of the Carnegie Endowment for International Peace:

> "The world war cost 30,000,000 lives and $400,000,000,000 in property * * *
>
> "With that amount we could have built a $2500 house and furnished it with $1000 of furniture, and placed it on 5 acres of land worth $100 an acre and given all this to every family in the United States, Canada, Australia, England, Wales, Ireland, Scotland, France, Belgium, Germany and Russia.
>
> "After doing this there would be enough money left to give each city of 20,000 inhabitants and over in all countries named a $5,000,000 library and a $10,000,000 university. And then out of the balance we could set aside money which would pay for all time to come a $1000 yearly salary for . . . 125,000 teachers and 125,000 nurses.
>
> "And after having done all this, we could still have enough . . . to buy up all of France and Belgium, and everything of value that France and Belgium possesses. . ."

After reading the foregoing, remembering it is the work of an agency endowed by a steelmaker, critics suffering from a "war profits" complex should read pages 22 and 23 of this issue, with the chart supplement, to see further how the steel industry pays for postwar adjustments.

To paraphrase General Sherman, the profits of war is hell!

THE BUSINESS TREND

Industrial Activity Gains In Spite of Obstacles

IN BROAD perspective, signs of business improvement are more positive. However, current statistics still reveal instances where activity is being held back by artificial or accidental obstacles.

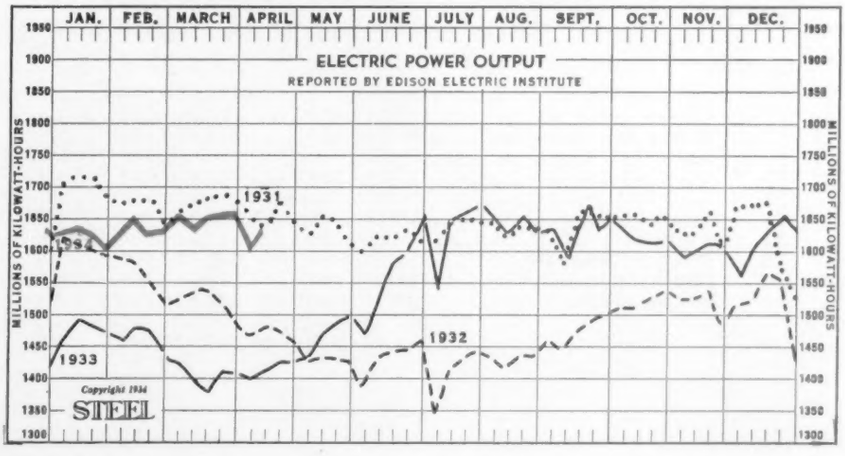
For instance, revenue freight car loadings slumped off rather sharply in the week ending April 7, due largely to reduced shipments of coal caused by higher prices and higher wages which went into effect April 1. Strike troubles, which prevail in many industrial sections, probably have not yet seriously affected the volume of industrial activity, but they have created uncertainties and caused delays which may prove serious if continued much longer.

In spite of these difficulties, the general trend of business is definitely upward. Industrial production, buoyed principally by expansion in steelmaking and automobile output, continues to gain. Employment and payrolls have responded to increased industrial activity and to the artificial stimulus of NRA. Even more encouraging is the recent consistent rise in the bond market, accompanied by slight but significant advances in the securities markets. Recent bank statements reflect a moderate expansion of commercial and securities loans. New mortgage loans, which had dwindled almost to the zero point, now are reported occasionally.

These last mentioned indicators seem to show that private investors again are on the point of investing their funds—providing, of course, that nothing is done in Washington to upset this seeming return of confidence.

Washington Veers To Right, Although Radical Element Still May Make Trouble

President Roosevelt's statement of the legislation he desires from the present session of congress was reassuring, particularly in that he virtually killed the Wagner bill and opposed the enactment of silver legislation. Pressure in congress for the latter may provoke a difficult situation. Also the attempt of brain trusters to save face against growing opposition may involve another attempt to pass the securities control bill with obnoxious features in it. On the whole, however, the trend in Washington seems to be toward more conservative ideas.



1934 Million Kw.—Hr.	
April 14	1,642
April 7	1,616
March 31	1,665
March 24	1,658

1933 Million Kw.—Hr.	
April 15	1,409
April 8	1,399
April 1	1,402
March 25	1,409

STEEL PRODUCERS IN 1933 CUT LOSS ON CAPITAL FROM 2.85 TO 0.91%

TWENTY-FIVE of the leading steel producers representing an ingot capacity of 62,342,700 gross tons, or 93 per cent of the total capacity of the United States, in 1933 averaged a loss of 0.91 per cent on capital invested, the eighth annual financial survey by STEEL reveals.

This contrasts with a comparable loss by the same 25 companies of 2.85 per cent on capitalization in 1932. STEEL's surveys showed profits of 0.40 per cent in 1931, 4.54 in 1930 and 9.88 in 1929. The current analysis, indicating a sharp reduction in the average loss, re-emphasizes the fact that the turning point for iron and steel occurred in 1932.

The detailed analysis appears in the accompanying chart supplement. In compiling data for 1933, an attempt was made to extend the study to include smaller companies. Six companies, not heretofore represented in this series, appear in the 1933 list.

Seven Companies Earned Profits

Inasmuch as only two corporations paid dividends as of Dec. 31, 1933, the column headed "Dividend Rate per Common Share" has been dropped from the 1933 compilation. Also it should be noted that losses per common share are computed for the current year only, owing to the varying arrearages on cumulative preferred stocks of many companies.

The report reflects several encouraging trends. Whereas in 1932 only two steel producers—National Steel Corp. and Granite City Steel Co.—earned a profit, in 1933 the number in this group mounted to seven: National Steel Corp., Inland Steel Co., Allegheny Steel Co., Gulf States Steel Co., Granite City Steel Co., Midvale Co. and Ludlum Steel Co. Losses sustained by many of those producers in the larger group, however, more than wiped out this encouraging showing and aggregate net loss for the industry was $67,626,759, before payment of any dividends. In 1932, the loss of the same companies approximated $150,000,000.

In every case but one the 1933 trend was upward, that is, losses were either greatly reduced, or profits were increased when compared with the 1932 showing. The one exception, Scullin Steel Co., lost only slightly more in 1933 than it did in 1932.

From analysis of the enclosed chart the following trends are evident, in comparing 1933 with 1932:

(1) Further reduction in the funded debt item, true in every case except that of Otis Steel Co., Follansbee Bros. Co. Inc., and Lukens Steel Co., where the funded debt remained unchanged.

(2) Constant stated value from 1932 to 1933 in issues of preferred and common stock, but a continued decline in the surplus account with the exception of National Steel Corp., Crucible Steel Co. of America, Lukens Steel Co. (where a new capital surplus was created), Gulf States Steel Co., Granite City Steel Co., Midvale Co. and Lud-

Manufacturing Net Profits and Sales in 1933

(Compiled by National City Bank of New York)

Companies	Industry	Net profits	Sales	Per Cent
11	Automobiles	$3,808,000	$309,614,000	1.2
14	Cotton Mills	8,296,000	116,340,000	7.1
7	Drugs and Sundries	15,706,000	224,675,000	7.0
8	Electrical Equipment	12,051,000(d)	297,276,000	4.1(d)
14	Food Products	21,046,000	483,670,000	4.4
17	Iron and Steel	58,262,000(d)	839,081,000	6.9(d)
15	Meat Packing	19,285,000	1,290,365,000	1.5
11	Petroleum	196,000	547,084,000	....
8	Rubber Tires, etc.	10,942,000	381,840,000	2.9
9	Shoes	11,611,000	171,467,000	6.8
126	Miscellaneous	28,107,000	936,216,000	3.0
240	Totals	$48,684,000	$5,597,628,000	0.9

(d) Deficit.

Financial Analysis of Iron and Steel Ind

Earnings, Capitalization, Assets and Liabilities of 25 Producers Having an Aggregate An

NAME OF COMPANY	Year	No. Shares Common Stock Outstanding	Par Value	Common Stock	Preferred Stock	Funded Debt	Surplus	Total Capitalization	Net Loss Before Dividends	Total Loss Before Div. and Int. on Bonds	Loss Per Share	Per Ce Total L on Capita ation
United States Steel Corp.....	1933	8,703,252	$100	$870,325,200	$360,281,100	$93,179,823	$557,330,506	$1,962,366,650	$36,501,122	$31,336,670	$4.19	1.5
	1932	8,703,252	100	870,325,200	360,281,100	95,950,254	599,100,247	2,006,906,822	71,175,705	65,862,244	8.18	3.2
Bethlehem Steel Corp.....	1933	3,200,000	No	315,900,000	93,388,700	131,526,264	81,145,825	621,960,789	8,735,723	2,003,672	2.73	0.3
	1932	3,200,000	No	315,900,000	93,400,000	136,482,045	89,221,676	635,003,721	19,404,431	12,507,451	6.06	1.9
Republic Steel Corp.....	1933	1,992,064	No	91,289,343	63,999,900	48,818,850	39,326,317	243,434,410	4,049,253	660,047	2.03	0.2
	1932	1,956,981	No	91,289,343	64,176,100	50,725,250	42,698,739	248,889,432	11,261,195	7,763,109	5.75	3.1
Jones & Laughlin Steel Corp...	1933	576,320	100	57,632,000	58,713,900	7,669,000	49,881,293	173,896,193	5,366,996	4,971,096	9.31	2.8
	1932	576,320	100	57,632,000	58,713,900	8,770,000	56,685,951	181,801,851	7,910,149	7,458,266	13.72	4.1
Youngstown Sheet & Tube Co.	1933	1,200,000	No	75,256,097	15,000,000	88,500,000	17,585,780	196,341,877	7,815,529	3,881,105	6.95	1.9
	1932	1,200,000	No	75,571,645	15,000,000	89,967,000	25,780,077	206,318,722	13,272,783	9,508,883	11.23	4.6
National Steel Corp.....	1933	2,156,832	No	53,920,800	None	39,561,667	48,815,578	142,298,045	2,812,407(x)	4,555,631(x)	1.30(x)	3.2
	1932	2,156,832	No	53,920,800	None	41,800,000	48,343,742	144,064,542	1,662,919(x)	3,699,520(x)	0.77(x)	2.5
American Rolling Mill Co.....	1933	1,710,776	25	42,769,409	1,964,900	36,784,050	14,439,517	95,957,876	673,089	1,471,604(x)	0.39	1.5
	1932	1,710,776	25	42,769,409	2,053,300	41,118,824	16,779,809	102,736,342	2,029,602	210,800(x)	1.19	0.2
Inland Steel Co.....	1933	1,200,000	No	35,000,000	None	40,500,000	18,398,163	93,898,163	166,693(x)	2,141,468(x)	0.14(x)	2.2
	1932	1,200,000	No	35,000,000	None	41,400,000	24,137,761	100,537,761	3,320,958	1,437,708	2.77	1.4
Wheeling Steel Corp.....	1933	387,635	No	19,381,750	38,079,700	26,218,000	14,945,719	98,625,169	284,430	1,164,139(x)	0.73	1.1
	1932	380,521	No	19,325,700	38,076,014	27,241,000	15,309,611	99,952,325	3,274,832	1,720,144	8.60	1.7
Crucible Steel Co. of America..	1933	450,000	100	45,000,000	25,000,000	13,000,000	22,781,344	105,781,344	354,750	413,349(x)	0.78	0.3
	1932	450,000	100	45,000,000	25,000,000	13,250,000	22,752,743	106,002,743	3,613,616	2,949,033	8.03	2.7
Colorado Fuel & Iron Co. (a)..	1933			Complete	Report	Not	Available		3,193,538	1,450,461		
	1932	340,505	No	8,512,625	2,000,000	32,183,000	4,709,182	47,404,807	4,253,261	2,644,099	12.49	5.1
Otis Steel Co. (b).....	1933	841,002	5	4,205,010	11,503,433	10,827,500	1,425,770	27,961,712	1,509,528	790,931	1.79	2.8
	1932	841,002	5	4,205,010	11,503,433	10,827,500	2,935,298	29,471,241	2,830,155	2,110,894	3.36	7.1
Pittsburgh Steel Co.‡.....	1933	253,500	100	25,350,000	10,475,000	8,394,000	4,961,601	49,180,601	2,339,402	1,720,004	9.23	3.5
	1932	253,500	100	25,350,000	10,475,000	8,878,000	7,064,732	51,767,732	2,501,081	1,833,387	9.88	3.5
Lukens Steel Co.§.....	1933	317,976	10	3,179,760	None	3,633,400	3,600,218	10,413,378	462,202	275,466	1.46	2.6
	1932	317,976	50	15,898,800	None	3,633,400	1,189,325	20,721,525	1,111,982	746,683	3.49	3.6
Allegheny Steel Co.....	1933	610,695	No	3,817,075	3,342,600	None	11,351,122	18,510,797	292,017(x)	292,017(x)	0.48(x)	1.5
	1932	610,695	No	3,817,075	3,342,600	None	11,472,285	18,631,960	1,052,080	1,052,080	1.72	0.6
Sharon Steel Hoop Co.....	1933	375,000	No	1,875,000	None	5,888,428	12,197,555	19,960,982	274,781	37,745(x)	0.73	0.2
	1932	375,000	No	1,875,000	None	6,000,000	12,839,201	20,714,201	2,016,269	1,703,108	5.36	8.2
Gulf States Steel Co.....	1933	197,500	No	16,850,000	2,000,000	5,000,000	3,080,034	26,930,034	193,041(x)	500,592(x)	0.97(x)	1.9
	1932	197,500	No	16,850,000	2,000,000	5,187,500	2,815,423	26,852,923	637,369	318,078	3.23	1.2
Granite City Steel Co.....	1933	254,992	No	6,088,821	None	None	2,918,134	9,006,955	506,652(x)	506,652(x)	1.99(x)	5.6
	1932	255,292	No	6,092,196	None	None	2,715,418	8,758,745	13,827(x)	13,827(x)	0.05(x)	0.1
Continental Steel Co.‡.....	1933	175,648	No	6,081,838	2,862,000	1,217,500	1,112,080	11,273,418	59,871	21,739(x)	0.34	0.2
	1932	175,648	No	6,081,838	2,862,000	1,414,000	1,134,124	11,491,962	205,327	143,187	1.16	1.2
Midvale Co.....	1933	200,000	No	14,574,621	None	None	737,604	15,312,225	28,349(x)	28,349(x)	0.14(x)	0.2
	1932	200,000	No	14,574,621	None	None	715,080	15,289,701	245,782	245,782	1.23	1.6
Laclede Steel Co.....	1933	206,250		4,125,000	None	650,000	1,536,107	5,661,107	40,483	4,837	0.20	0.1
	1932	206,250		4,125,000	None	750,000	1,700,341	5,825,341	110,207	74,582	0.53	1.3
Wickwire Spencer Steel Co. (a)	1933	958,750		4,976,593(c)	None	20,540,065	None	20,540,065	2,179,275	395,998	2.27	1.9
	1932	958,750		2,488,255(c)	None	20,630,940	None	20,630,940	2,833,249	1,090,179	2.95	5.3
Scullin Steel Co.....	1933	30,000	No	150,000	500,000	4,559,500	1,393,000	6,602,500	327,481	609,325	10.92	9.2
	1932	30,000	No	150,000	500,000	4,612,000	2,004,449	7,266,449	286,493	575,933	9.57	7.9
Follansbee Bros. Co.....	1933	172,852	No	4,321,300	3,000,000	2,525,000	748,427	10,773,427	665,572	530,823	3.85	4.9
	1932	172,852	No	4,321,050	3,000,000	2,525,000	1,413,999	11,260,049	1,044,897	910,149	6.04	8.1
Vanadium Alloys Steel Co.‡...	1933	210,000	No	2,000,000	None	None	4,097,569	6,097,569	147,494	147,494	0.70	2.4
	1932	210,000	No	2,000,000	None	None	4,248,417	6,248,417	326,745	326,745	1.55	5.2
Ludlum Steel Co.....	1933	199,655	1	199,655	4,480,000	None	2,006,167	6,685,822	161,063(x)	161,063(x)	0.81(x)	2.4
	1932	198,405	1	198,405	4,595,000	None	1,818,167	6,611,572	474,311	474,311	2.39	7.1
Totals*.....	1933	26,580,699		$1,704,269,272	$694,591,233	$588,993,047	$915,815,430	$3,979,471,108	$ 67,626,759	$ 36,033,120	$2.54	0.9
	1932	26,537,542		1,714,761,347	694,978,447	611,162,713	994,876,615	4,093,757,019	149,262,472	116,887,789	5.62	2.8

(x) Earnings.
(a) In receivership.
(b) Placed in hands of bondholders' committee.
(c) Deficit in common stock.
‡ Fiscal year ends June 30.
§ Fiscal year ends Oct. 30.
* Totals do not include Colorado Fuel & Iron Co.

Year	Per Cent Earned on Capitalization	Per Cent Loss on Capitalization
1925	5.61	....
1926	6.86	....
1927	5.22	....
1928	6.55	....
1929	9.88	....
1930	4.54	....
1931	0.40	....
1932	....	2.85
1933	....	0.91

nd Steel Industry for 1933

ıg an Aggregate Annual Ingot Capacity of 62,342,700 Gross Tons

Total Loss Before Div. and Int. on Bonds	Loss Per Share	Per Cent Total Loss on Capitaliz-ation	Loss Per Ton Ingot Capacity	Rated Ingot Capacity, Gross Tons	Capital-ization Per Ton Ingot Capacity	Total Assets	Current Assets	Current Liabilities	NAME OF COMPANY
$31,336,670	$4.19	1.59	$1.14	27,341,900	$71.70	$2,102,896,879	$405,193,827	$52,283,704	...United States Steel Corp.
65,862,244	8.18	3.28	2.60	27,341,900	73.40	2,158,732,222	397,486,241	46,987,376	
2,003,672	2.73	0.33	0.21	9,360,000	66.45	649,388,274	114,599,514	18,927,485	.....Bethlehem Steel Corp.
12,507,451	6.06	1.97	1.33	9,360,000	67.84	659,322,587	111,050,005	15,246,904	
660,047	2.03	0.27	0.13	5,013,000	48.56	268,275,152	41,437,341	12,371,958	.....Republic Steel Corp.
7,763,109	5.75	3.12	1.56	4,968,000	50.10	270,168,332	35,569,355	8,131,730	
4,971,096	9.31	2.86	1.36	3,660,000	47.51	186,700,055	41,990,999	4,022,922	..Jones & Laughlin Steel Corp.
7,458,266	13.72	4.10	2.18	3,420,000	53.16	193,527,940	44,474,350	3,178,209	
3,881,105	6.95	1.98	1.24	3,120,000	62.93	205,854,477	59,184,118	5,407,622	Youngstown Sheet & Tube Co.
9,508,883	11.23	4.61	3.05	3,120,000	66.13	215,938,985	62,115,837	4,279,076	
) 4,555,631(x)	1.30(x)	3.20(x)	2.04(x)	2,232,000	63.75	150,727,414	33,805,379	6,040,949	.....National Steel Corp.
) 3,699,520(x)	0.77(x)	2.56(x)	1.70(x)	2,232,000	64.55	149,876,301	32,526,508	3,446,492	
1,471,604(x)	0.39	1.53(x)	0.67(x)	2,200,000	43.62	144,341,946	29,022,687	10,570,459	....American Rolling Mill Co.
210,800(x)	1.19	0.21(x)	0.09(x)	2,200,000	46.72	138,153,569	25,910,280	2,901,105	
.) 2,141,468(x)	0.14(x)	2.28(x)	1.07(x)	2,000,000	46.95	102,548,038	20,599,202	6,108,948	.....Inland Steel Co.
1,437,708	2.77	1.43	0.71	2,000,000	50.27	106,284,661	20,081,876	3,005,254	
1,164,139(x)	0.73	1.18(x)	0.41(x)	1,500,000	65.75	103,745,437	26,167,560	3,242,946	.....Wheeling Steel Corp.
1,720,144	8.60	1.73	1.15	1,500,000	66.64	104,414,825	22,548,632	2,450,673	
413,349(x)	0.78	0.39(x)	0.47(x)	875,000	120.89	109,320,410	17,861,437	2,750,618	..Crucible Steel Co. of America
2,949,033	8.03	2.78	3.37	875,000	121.14	110,040,988	17,825,421	3,249,796	
1,450,461				Complete	Report Not	Available			(a) Colorado Fuel & Iron Co.
2,644,099	12.49	5.59	3.15	840,000	56.43	49,919,996	8,453,112	2,300,154	
790,931	1.79	2.83	0.95	830,000	33.70	33,981,146	5,373,524	5,304,562	.....(b) Otis Steel Co.
2,110,894	3.36	7.16	2.55	830,000	35.50	34,165,332	4,621,416	2,621,591	
1,720,004	9.23	3.49	2.39	720,000	68.31	73,533,428	14,194,259	2,037,800	.....‡Pittsburgh Steel Co.
1,833,387	9.88	3.54	2.54	720,000	71.89	74,885,177	15,432,071	1,724,452	
275,466	1.46	2.64	0.50	550,000	18.75	13,261,277	3,608,676	2,551,032	.....§Lukens Steel Co.
746,683	3.49	3.60	1.36	550,000	37.67	22,169,095	3,116,204	1,441,692	
.) 292,017(x)	0.48(x)	1.58(x)	0.60(x)	482,000	38.40	29,077,335	5,589,594	1,091,005	.....Allegheny Steel Co.
1,052,080	1.72	0.57	2.02	482,000	38.66	28,250,845	5,115,908	1,065,561	
37,745(x)	0.73	0.19(x)	0.08(x)	450,000	44.36	22,489,878	3,946,151	1,839,319	.....Sharon Steel Hoop Co.
1,703,108	5.36	8.22	3.78	450,000	46.03	23,239,304	3,570,906	1,856,064	
x) 500,592(x)	0.97(x)	1.89(x)	1.25(x)	400,500	67.24	28,600,589	4,187,778	1,130,495	.....Gulf States Steel Co.
318,078	3.23	1.18	0.66	480,000	55.94	28,817,214	3,621,070	1,390,937	
.) 506,652(x)	1.99(x)	5.63(x)	1.40(x)	360,000	25.02	9,824,644	4,464,531	379,752	....Granite City Steel Co.
.) 13,827(x)	0.05(x)	0.16(x)	0.04(x)	360,000	24.33	9,404,775	3,862,394	221,503	
21,739(x)	0.34	0.19	0.09(x)	280,000	40.25	12,279,874	4,007,807	559,364	.....‡Continental Steel Co.
143,187	1.16	1.25	0.51	280,000	41.04	12,251,878	3,553,042	256,384	
x) 28,349(x)	0.14(x)	0.18(x)	0.14(x)	257,400	59.49	15,639,801	7,827,227	161,974	.....Midvale Co.
245,782	1.23	1.61	1.23	257,400	59.40	15,601,142	7,308,140	91,239	
4,837	0.20	0.09	0.02	250,800	22.57	6,591,005	1,878,559	176,278	.....Laclede Steel Co.
74,582	0.53	1.28	0.29	250,800	23.23	6,755,521	2,084,776	89,816	
395,998	2.27	1.92	2.64	150,000	136.93	26,544,246	6,559,394	413,114	(a) Wickwire Spencer Steel Co.
1,090,179	2.95	5.29	7.27	150,000	137.54	27,387,876	6,661,436	254,967	
609,325	10.92	9.23	5.08	120,000	55.02	7,490,969	270,557	518,163	.....Scullin Steel Co.
575,933	9.57	7.96	4.79	120,000	60.66	7,809,670	477,154	454,984	
530,823	3.85	4.92	5.89	90,000	119.71	11,715,681	2,712,423	858,150	.....Follansbee Bros. Co.
910,149	6.04	8.08	10.10	90,000	125.11	11,698,801	2,631,391	180,817	
147,494	0.70	2.41	2.38	62,100	98.19	6,310,380	3,008,236	176,134	‡Vanadium Alloys Steel Co.
326,745	1.55	5.23	5.26	62,100	100.62	6,554,673	3,369,635	252,785	
.) 161,063(x)	0.81(x)	2.41(x)	4.24(x)	38,000	175.94	6,905,058	2,797,985	219,236	.....Ludlum Steel Co.
474,311	2.39	7.17	12.59	38,000	173.97	6,727,175	2,640,285	115,603	
$ 36,033,120	$2.54	0.91	$0.58	62,342,700	$63.83	$4,328,043,393	$860,288,765	$139,143,989	..... *Totals
116,887,789	5.62	2.85	1.88	62,137,200	65.86	4,422,178,888	837,654,333	104,895,010	

Cent ed on ization	Per Cent Loss on Capitalization
61	....
86	....
22	....
55	....
88	....
54	....
40	....
..	2.85
..	0.91

(x) Earnings.
(a) In receivership.
(b) Placed in hands of bondholders' committee.
(c) Deficit in common stock.
‡ Fiscal year ends June 30.
§ Fiscal year ends Oct. 30.
* Totals do no include Colorado Fuel & Iron Co.

lum Steel Co. With the general trend in reductions to the surplus and funded debt accounts, total capitalization declined, 1933 against 1932.

(3) An increase in current liabilities with the expansion of steel producers' inventories, but a continued decline in current assets.

(4) Revision in rated ingot capacities, in most cases, owing to a recent survey made on this subject by the American Iron and Steel institute.

Two Maintain Uninterrupted Dividends

(5) Continued suspension of most dividends and in many cases, preferred dividends, most of which latter are cumulative. Only National Steel Corp. and Granite City Steel Co. kept up their uninterrupted common dividend disbursements through 1933. These two and Midvale Co. were paying dividends at the end of 1932; dividend payers numbered seven at the end of 1931 and 13 at the end of 1930.

(6) In the year closed, receivership came to Colorado Fuel & Iron Co.; Wickwire-Spencer Steel Co. continued in its receivership; and Otis Steel Co., its bonds being in default as of March 1, 1933, was in the hands of a protective bondholders' committee.

(7) Despite the gain in current liabilities and the decline in current assets, the industry's current position remains strong and a ratio of 6.2 for 1 was reported for all producers in aggregate as of Dec. 31, 1933. This compares with a quick asset ratio of 7.9 for 1 in 1932 and 6.8 for one in 1931.

That the industry, despite the declines in funded debt and surplus in 1933, still remains a $4,000,000,000 basic industry is indicated in the total of assets for the 25 companies compared. Total assets have been declining, however, from 1930.

STEEL gladly acknowledges the kind co-operation and the comptrollers and treasurers of the companies reviewed in furnishing earnings statements for the years' covered.

Earn Less Than Cent Per Dollar Sales

How the iron and steel industry fared in 1933 in comparison with other manufacturing groups is shown in an analysis of the reports of 240 corporations just completed by the National City Bank of New York.

In this study, which included 17 companies in the iron and steel industry, the average net profit for the 240 reporting companies in 1933 was only 9 mills per dollar of sales. Against this average for the 240 companies in 11 groups, the average for the 17 iron and steel companies was a net loss of 6.9 cents per dollar of sales. Results of the analysis are shown in the table on page 22.

Commenting on the report, the April bulletin of the bank says: "These figures are of particular interest in view of the charge, frequently repeated, that capital exacts undue tolls upon the products of industry. It is true that industry made much larger profits in the period from 1922 to 1929. Even in this period, however, the percentage of profits to gross business remained moderate, the larger actual profits being realized on a great increase in the volume of business. This is proved by the accompanying table, compiled from the United States Treasury 'Statistics of Income' for the year 1919 to 1932.

"Attention is called to the fact that in no year after 1919 did the share of the total value of the product retained as profit equal six per cent. Including the deficit years of 1921, 1931 and 1932 the average profit on sales for the fourteen years was only 3.76 per cent. Such figures afford no support for the common charge that the depression was caused by the exorbitant profits of industry during the prosperity and failure to distribute purchasing power freely enough to enable the volume of products to be bought and consumed."

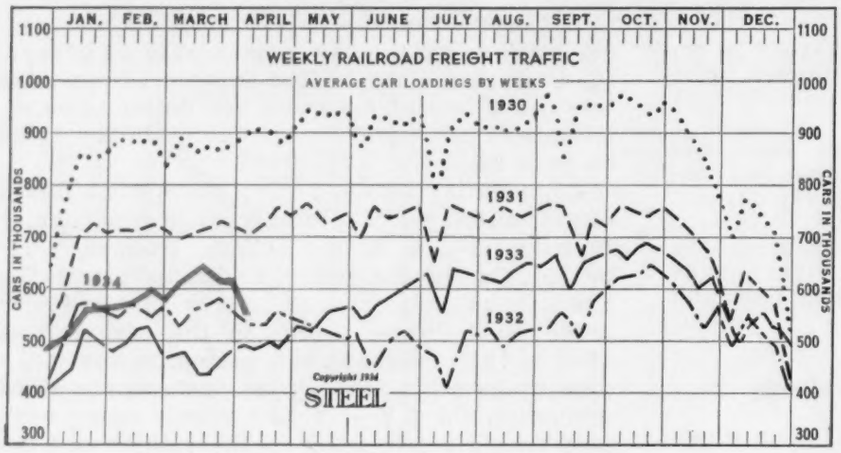
All Manufacturing Corporations in U. S.

(From "Statistics of Income," U. S. Treasury)

(In Millions of Dollars)

Calendar Year	Number of Cos.*	Sales or Gross Income	Net Income After Taxes	Per Cent Net to Gross
1919	67,852	$52,290	$3,493	6.68
1920	78,171	56,649	2,337	4.13
1921	79,748	38,442	473(d)	1.23(d)
1922	82,485	44,683	2,251	5.04
1923	85,199	56,221	3,086	5.49
1924	86,803	53,911	2,334	4.33
1925	88,674	60,830	3,154	5.18
1926	93,244	62,495	3,124	5.00
1927	89,816	63,723	2,580	4.05
1928	91,573	67,273	3,366	5.00
1929	92,230	72,132	3,862	5.35
1930	91,504	58,650	801	1.37
1931	89,085	44,033	988(d)	2.24(d)
1932	82,733	23,846	1,533(d)	6.43(d)
14 Year Average	85,651	$53,941	$2,028	3.76

(d) Deficit. *Excluding inactive corporations.



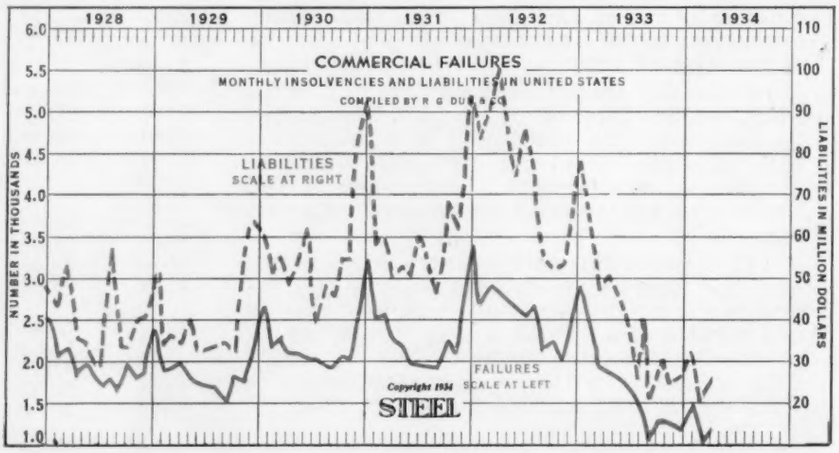
	1934	1933
April 7	557,887	492,061
March 31	608,443	498,356
March 24	608,462	479,959

Slump in Coal Shipments Affects Freight Traffic

Loading of revenue freight in the week ending April 7 totaled 557,887 cars, according to the weekly report of the American Railway association. This was a decrease of 50,556 cars from the preceding week, but was an increase of 65,826 cars over the corresponding week in 1933. The decline in traffic from the preceding week was due almost entirely to the falling off in the movement of coal as a result of higher prices and increased mine wages which went into effect April 1.

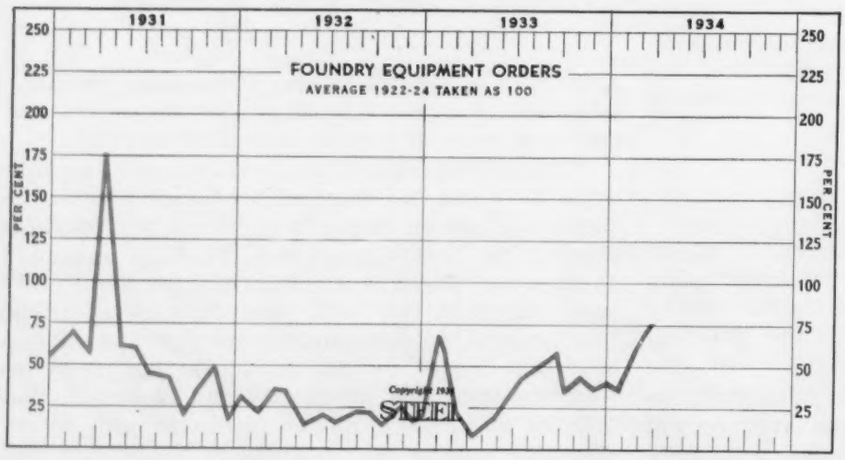
March Commercial Failures Continue at Low Ebb

Commercial failures, reported by Dun & Bradstreet, Inc., numbered 1102 in March and were the lowest for any month since 1920, excepting only the month of February this year, when 1049 insolvencies were reported. In March, a year ago, failures numbered 1948. The aggregate of indebtedness reported for defaults that occurred last month was $27,227,511. This compares with $19,444,718 of liabilities recorded for February and $48,500,212 for March, 1933.



Number	
March, 1934	1,102
February, 1934	1,049
March, 1933	1,948

Liabilities	
March, 1934	$27,227,511
February, 1934	19,444,718
March, 1933	48,500,212



	Per Cent
March, 1934	75.4
February, 1934	65.8
March, 1933	9.8

Foundry Equipment Orders Register Sharp Increase

For the past two months the index of foundry equipment orders has made an encouraging recovery, according to statistics compiled by the Foundry Equipment Manufacturer's association. From the low point of 37.2 in January the order index climbed to 65.8 in February and registered 75.4 in March, the highest point since the brief spurt in March, 1931 when the index advanced to 174.4. The index of shipments in March was 62.6 and compares with 42.9 in February and 19.7 in March, 1933.

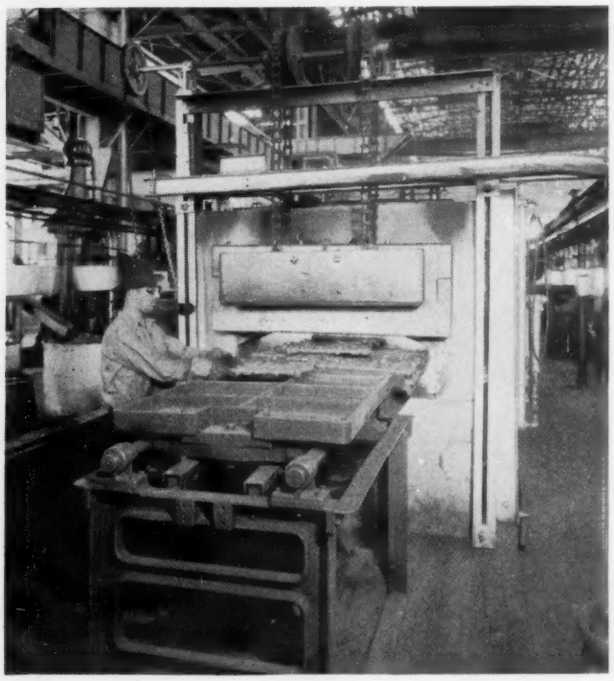
FORD USES MANY TYPES OF FURNACES IN FORGING PLANT

BY J. B. NEALEY

TECHNIQUE of forging has been developed and improved to the degree that today it can be included in the list of exact sciences. Use of refined fuel gas in modern heating furnaces has contributed much to this advancement. These furnaces are clean, compact and insulated against heat losses.

Between 600 and 700 gas-fired furnaces of all types are operated in the Rouge plant of the Ford Motor Co., Dearborn, Mich. Gas is employed as fuel for open-hearth furnaces, soaking pits, forging furnaces, heat treating furnaces and baking ovens.

The steel division is housed in a building in the general shape of the letter "I," with ten open-hearth furnaces and 60 soaking pits located along the top cross bar, the rolling mills along the body of the "I" and the forging furnaces and hammers in the lower cross bar. Thus, steel comes directly from the furnaces and soaking pits, through the various stands of rolls, to the forging division where billets are heated and formed into various car parts.



Continuous gas furnace of the pusher type, heating period being regulated by length and frequency of the pusher stroke

In this operation one end of the camshaft is upset. Stock is heated in the slot-type furnace in the background, with diffusion flame burner. Air preheater is located on top of the furnace

Three parallel rows of forging furnaces include approximately 15 box-type furnaces in each; a fourth row comprises long continuous furnaces. Hammers are set between the furnaces, allowing a broad aisle between each row for the movement of operators and material. Each row is served with a continuous traveling conveyor which is located just at the rear of the hammers and runs under the furnaces. Finished forgings are placed on this conveyor by hammer men and are discharged onto a grid where they are sorted and routed to the various machine shops for finishing. Overhead monorail conveyors also are provided, with baskets for small parts.

Most of these furnaces are of the slot type, ranging around 10 x 4 x 3 feet in size and set on 2-foot legs. They are of brick, steel encased, and each is heated with a single gas burner equipped with a gas-air proportioner of the inspirator type. A casting projects about 2 feet beyond the furnace at each end of the slot, and a refractory wall rises from the floor to the bottom of the slot, just beyond. The castings and the wall are used to rest the material being heated and the wall also serves to protect the operator from the heat. A heavy cast-iron shield is suspended about 6 inches in front of the furnace and extends from the top down to

CONTINUOUS gas furnace with motor driven chain loop and spindles which protrude through the hearth and form a conveyor for the work. Note overhead continuous conveyor with baskets for transfer of work

the upper edge of the slot. A 2-inch drilled pipe, located under the lower edge of the slot, is used to blow the hot air from the furnace up and back of this shield.

A modification of this type furnace is one in which the front is left open and then filled with refractory blocks and spaced so as to provide three rows of ten holes each. These are used to heat one end of camshaft forgings, preparatory to forming in an upsetter, as shown in an accompanying illustration. The arrangement of floor wall and suspended shield with air curtain also is used on these furnaces.

Scale Formation Minimized

Diffusion flame burners have been placed on two or three of these slot-type forging furnaces. On one the burner is located in one end and the diffusion flame travels the length of the furnace, parallel with the slot. On another of these furnaces the burner proper is a series of small tubes protruding through an air box into a combustion throat which opens directly into the furnace. The plate of the air box, through which the gas tubes protrude into the combustion throat, is perforated with multiple ports, through which air is forced. This provides multiple and parallel streams of gas and air which burn with a luminous flame. At the hearth line is a series of tubes through which gas alone is forced into the furnace and this raw gas blanket envelops the steel being heated and protects it from scaling. Hot products of combustion are drawn out at the opposite end of the furnace and passed through a recuperator to preheat the air used in the burner.

The principle of diffusion combustion and its use in forging furnaces were described at length in STEEL for Sept. 5 and Sept. 19, 1932.

A feature of the forging furnaces in the Ford plant is the use of a dolomite bed to protect the hearths. At one time hearth brick disintegrated so rapidly that they had to be replaced at the end of each shift. Now, from 2 to 2½ inches of powdered dolomite is laid on the hearths and protects them from slag and heat so that they stand up from three to eight months. The dolomite absorbs the slag and is usually changed every two weeks. The steel can be placed directly on the dolomite bed while being heated as the dolomite is perfectly dry and does not adhere.

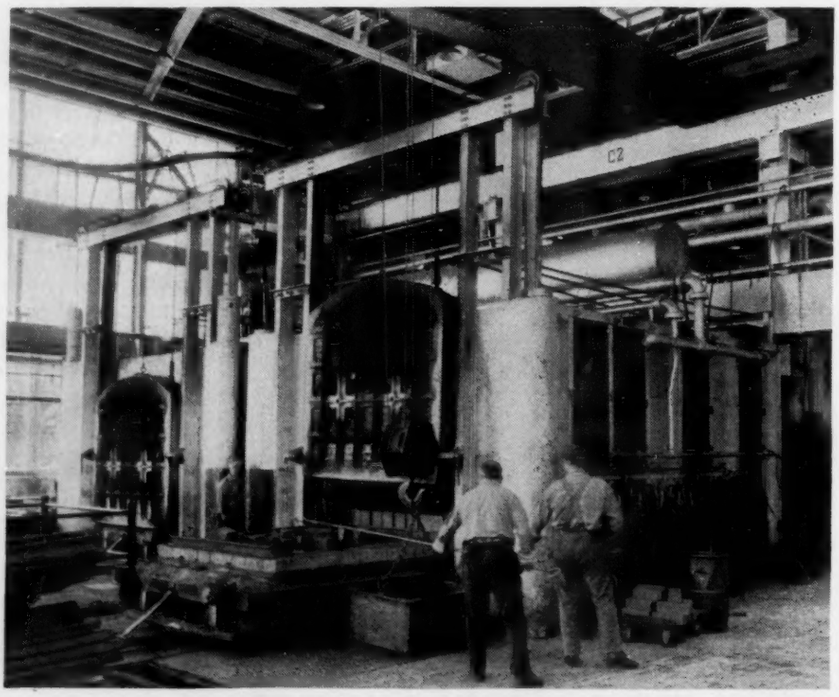
Steel is forged on an initial heat of approximately 2100 degrees Fahr. with an allowable range of 100 degrees on either side. When several forging operations are involved the temperature drops rapidly and the part must be reheated. The lower limit on temperature is about 1650 degrees Fahr.

A number of continuous forging furnaces of the chain and sprocket type are included in the equipment of this division. One of these, heating stock for the radius foot, is 15 feet long, 4 feet wide and 4 feet high, resting on 3-foot legs. It is provided with a motor-driven loop chain conveyor, which travels below the hearth. Spindles 18 inches long, bolted to the chain on 6-inch centers, protrude through a slot in the hearth and the work is carried athrough the furnace on these, as shown in one of the illustrations. This method eliminates heating of the chain and thereby prolongs its life.

Twin Furnaces for Axles

Heat is supplied to the furnace through four gas burners on each side, located in the front or discharge half, and the conveyor extends 4 feet beyond the charging end for loading. An operator removes the hot stock from the discharge end with tongs and places it directly in the forging press. Two similar furnaces, paralled and built to form a single unit, have a chain conveyor running in the space between them. Front axles are carried on the conveyor in such a way that each end protrudes into a combustion chamber and there is heated for forming.

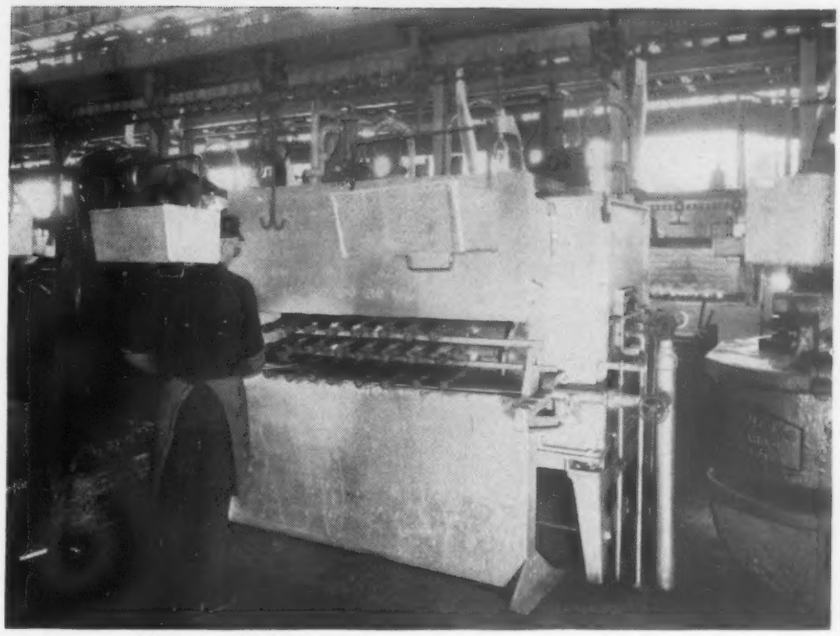
An automatic temperature control also is a part of the equipment of the chain and sprocket furnace. Most of the burners in these furnaces are supplied with proportional mixers



Car-type gas-fired furnaces used for heating heavy stock for forging, and for carburizing large cams. Note heavy-duty crane for handling work

(gas and air) of the venturi type, gas being furnished at 15 pounds pressure and the inspirator set to draw in whatever volume of air is desired. With this device any desired furnace atmosphere—reducing, neutral or oxidizing—can be obtained and automatically maintained regardless of the volume of work passing through or the amount of fuel being burned. The temperature control essentially comprises a thermocouple in the furnace and motor operated valve in the gas supply line. When the temperature rises above the point set on the indicator the motor of the valve is energized and closes off the fuel supply to the burners; conversely when temperature drops below the set point, the motor operates to reopen the valve.

Similar furnaces are used for normalizing forgings and range up to 20 feet in length. For camshafts, one of these furnaces is equipped with four chain loops with plates bolted to the tops of the spindles. In this manner two rows of camshafts pass through continuously. Other furnaces are used interchangeably for different types of work.



Slot-type heating furnace in which slot is covered by refractory block with three rows of holes for camshaft stock. This arrangement increases capacity and reduces escape of heat

Forgings Are Normalized

Normalizing furnaces of the pusher type range up to 25 feet in length, 6 feet square in cross section, and are heated with four gas burners on each side, overfiring the work. The forged parts are carried through in alloy trays riding on water-cooled skids which protrude 7 feet beyond the charging end for a loading table. An overhead rail, with chain hoist, runs along one side of the furnace and is used to return the trays to the loading table. The pusher is operated with a motor, cam and link device and the heating period is regulated by adjusting the frequency and length of stroke.

Another forging division is located in the "spring and upset" building and here large die blocks and other parts requiring crane handling are heated and formed under heavy hammers or presses ranging up to 2000 tons capacity.

A battery of car-type furnaces is employed in the heating of large billets, the cars being run out on tracks and the billets loaded by crane, as shown in the illustration on Page 26. These furnaces are all of brick construction, heavily insulated and encased in steel. Each is approximately 16 feet long, 12 feet wide and 8 feet high, heated with three gas burners on each side. The front is closed with a counterweighted door and the car is moved on the track with a motor-operated rack and pinion located between the rails.

The car top is of firebrick to form the hearth and is sand sealed with the walls so that no heat can penetrate through to the trucks and wheels below. Waste products of combustion are exhausted to a stack through ducts and an induced draft from a motorized fan.

Loaded and unloaded with a heavy mechanical billet handler are two billet furnaces of the same size and construction as those just described except that no cars are used, the hearths being stationary. These units are set to form the two sides of a square and the track for the billet handler is laid past one and up to the door of the other. The billet handler is motor operated both as to its movement on the track and the head holding the billet. This head can be moved about a horizontal circle, up and down, into and out of the furnace.

Numerous Smaller Furnaces

Nearby is a battery of from 15 to 20 slot-type forge furnaces for heating smaller stock. These are of brick and steel, each being about 6 feet deep, 6 feet high and 10 feet wide, the slot running the length of the long side. Heat is supplied by a gas burner in each end overfiring the work. A steel apron is provided in front as an aid in placing the stock to be heated.

A combination slot and continuous furnace is used for heating one end of camshaft stock, upset in a header, directly adjacent. This furnace is 9 feet wide, 4 feet deep and 5 feet high, and has a slot running the entire length of the long side. Heat is furnished through a gas burner located in each end. Directly in front of the furnace and slot is an endless loop chain conveyor, motor operated, and at an elevation that will permit the ends of the steel placed on it to protrude into the furnace, through the slot, as it rides along on the chain. An operator with tongs continuously transfers the hot stock to the header where the end is upset.

Some of these parts then are normalized in continuous, pusher-type furnaces which are about 14 feet long, 7 feet wide and 5 feet high. These have alloy rails on the hearth for the work to ride on and the parts are pushed through by a pusher head operated by motor through a cam and link mechanism. The hearth extends 4 feet beyond the charging end for loading purposes and three rows of forgings are pushed through at the same time. Temperatures of about 1650 degrees Fahr., depending upon the class of work, are maintained with four gas burners on each side. The heating period is regulated through the length and frequency of the pusher stroke.

Chromium Sheets Produced In Fluted Patterns

American Nickeloid Co., Peru, Ill., manufacturers of various types of chromium and nickel bonded metal, is now producing its chromium bonded sheets in a new fluted design. Intended for show window backgrounds or merchandise display features, the bonded sheet is worked easily and retains its beauty permanently. The metal is available in 30 x 84-inch and 36 x 84-inch sizes or in multiples of these sizes, according to users' requirements.

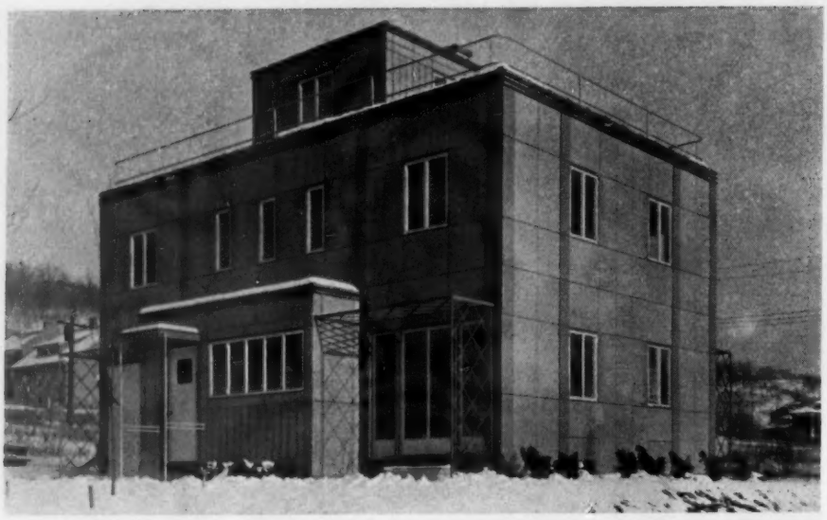


Fig. 1—This steel house completed recently has a porcelain enamel exterior. Many new design features were introduced to facilitate the use of steel as the principal material of construction

Completes Shop Fabricated Steel House in Wheeling

TO SERVE as an experiment and a contribution to the present trend toward steel houses, the Wheeling Corrugating Co., subsidiary of the Wheeling Steel Co., Wheeling, W. Va., last summer began construction of a prefabricated porcelain enameled steel house in Wheeling. This residence, designed by Charles Bacon Rowley & Associates Inc., Cleveland, was described in a preliminary way in the July 24, 1933, issue of STEEL, Page 26; and a view of the nearly completed unit was shown on Page 11 of the Dec. 11 issue.

The house was completed late in December and the purpose of this article is to describe some of the more important details of construction, particularly as related to steel. Fig. 1 is a view of the completed residence.

Medium-Size Structure

The first floor consists of a vestibule entrance, living room, dining room, kitchen, laundry, heater room and attached garage. Located on the second floor are four bedrooms and two bathrooms; on the third floor is a penthouse with two additional rooms and a tile roof deck completely surrounding the penthouse.

Masonry walls 8-inches thick, resting on large-sized footings, provide the foundation for the house. Steel rods ½-inch diameter were imbedded in the masonry and an ⅛-inch thick steel plate with properly spaced holes placed over them and welded to the rods and at the corners. The rods then were burned off and filed flush with the top surface of the plate.

One-story high wall sections, made of 20-gage steel sheets, were erected on top of and welded to the steel plate. Because of their design, these wall sections serve not only as bearing members but as a surface to which inside and outside finished walls were attached. A steel plate covers the top of the first-story wall sections and the second story is welded to and rests on this plate. Where openings occur for doors and windows, box-like rectangular steel sections were provided, so formed that they serve as grounds for the inside plaster as well as suitable facing for attaching interior metal trim. Steel trim is used about windows and doors.

Sub-frames were made to fit in these openings and were so formed with flanges that they would weld easily to the wall section. The company's Bar-Z stud was welded to the wall section as shown in Fig. 2 and with these studs on approximate 2-foot centers, proper support was given for the Bar-X metal lath which served as the plaster base.

Exterior finish consists of panels approximately ½-inch deep with the sides or edges shaped to work with the special fastening devices and to form a key for holding the caulking compound, which was applied with a gun after the panels were erected. These panels are covered with porcelain enamel of dull finish to avoid strong reflections. Panels vary in size from 4 feet long by 2½ feet wide to 2 feet long by 6 inches wide. Corner panels and pilasters are formed 1 inch deep so as to project ½ inch. Color of the corners and pilasters is a dark blue gray with a lighter gray sprayed over this background; wall panels are the reverse, namely, a light gray background with dark gray sprayed over.

These panels overlap the masonry foundation and a piece of stainless steel, which forms a drip or flashing, is held by clips and provides a finish at the bottom. The clips are welded to the sill and to the stainless steel. Caulking material fills the joint between the bottom of the panel and this drip.

Channels Hold Panels

One-inch cold rolled steel furring channels are welded horizontally to the wall and spaced so as to line up with the tops and bottoms of the panels. Self-tapping screws on approximately 6-inch centers going into these channels firmly hold the flanges of the panels, as well as a strip of galvanized steel, which covers the flange. This acts as a ground for the caulking.

The porcelain enamel cornice is formed in long sections with a deep reveal and is fastened in place in the same manner as are the panels. The coping of cast iron is designed with a lap joint somewhat similar to a tile coping, but is porcelain enameled to match the wall panels. It is set in mastic over the built-up roofing felts, which carry up and over the wall under this coping.

A canopy, porcelain enameled the same color as the wall panel, sets off the front entrance and a steel trellis provides support for vines over a stone terrace in front of the living room. Similar trellis is used over the garage doors and at the rear of the house. All windows are of heavy steel casement type with oxidized copper screens on the inside. Operating hardware of the sash is so arranged that the windows may be opened or closed independent of the screen.

The floor system is simple, fire-

ANOTHER type of steel house featuring shop fabricated units and a porcelain enamel exterior is described in this article. This residence, completed recently in Wheeling, W. Va., was described in a general way by STEEL *last July when erection started; some of the details of construction are of interest now that the unit is finished. Several other types of steel houses have been reviewed in recent issues of* STEEL *as follows: April 2, Page 30; April 9, Page 37; and April 16, Page 30. Additional types will appear soon.*

proof and of low cost. The 16-gage sheet steel floor deck is composed of a series of channels each of which has a top recessed flange approximately 9 inches wide. These flanges are spot welded together, the welds occurring on about 6-inch centers. The metal being recessed at the junction points enables the making of a flush lap and a smooth surface. The 8-inch depth of this floor construction allows ample room for the mechanical trades. With ¼-inch rods welded to the bottom flange and running at right angles to the web, the Bar-X lath was fastened easily.

On the first story, this floor rests on the steel foundation plate and is welded to the steel wall; on the second story the floor is welded to a sill angle and to the steel wall. The steel deck was coated with heavy asphalt. A special shaped channel of sheet steel, 5/16 inch high and on 12-inch centers, was laid at right angles to the channel sections. A strip of felt separates these channels from the steel deck and self-tapping screws on approximately 8-inch centers hold the channels to the deck.

Clips Hold Flooring

The 5/16-inch space between the under side of the wood floor and the steel deck is packed with a gypsum filler. As the wood flooring is laid across these channels, a special metal clip is used which fits into the channel and has teeth to bite into the tongue of the flooring. As the boards are laid, each successive board drives this metal tooth into the preceding board. A wooden base board covers the joint between the wooden floor and the plastered wall. Doors are of the flush wood type with exception of casement doors which are of steel.

Stairways were fabricated in the shop using 4-inch rolled channels with 12-gage steel stringers welded to the channels. Treads and risers are veneered with wood and a wooden handrail is supported by a steel balustrade of modernistic design.

Beams and columns are fabricated from 16-gage sheet steel; these members take care of concentrated loads such as under the penthouse walls and also frame all floor openings. These members were placed easily and welded to the floor and wall sections.

The heating system is of the hot water, down-feed type. In the second story bedrooms the supply pipes were run so as to avoid cutting of beams; by furring with lath and plaster, a cornice detail was worked out to enclose the pipes. The cast iron radiation is hung on the walls.

Space back of the porcelain enameled panels and interior walls was filled with rock wool. The penthouse ceiling as well as the ceilings underneath the roof deck were insulated with 4 inches of rock wool in addition to the 1-inch insulating board that was laid over the steel deck before the built-up roofing was applied.

Display Metal Offered in Crimped or Striped Sheets

A feature of exterior and interior decorative effects being installed in the new Ford exhibit building at *A Century of Progress* exposition in Chicago, is the use of a light-gage metal display material known as Chromflex, mounted on plywood panels and providing a bright or satin metallic finish for displays. The material is fabricated by the Apollo Metal Works, La Salle, Ill., and may be obtained in the form of flat, fluted, crimped or striped sheets; flat sheets on plywood; angles; and moldings. A special form of the material, called ChromCopper, is being used on the exterior of the Ford building, better to combat weather conditions.

The material is offered in all thicknesses from 0.010 to 0.032-inch thick, in sheets 36 x 84 inches in size. Mounting of the metal on wood moldings and plywood is a comparatively recent development and one which has attracted attention at numerous displays where it has been adopted.

Traces Enameling History

"An Ancient Art Becomes a Modern Industry" is the title of a booklet of general interest being distributed by the Ferro Enamel Corp., 4150 East Fifty-sixth street, Cleveland. The book deals with the history of the development of porcelain enameling and contains numerous illustrations. It is available gratis.

Free Deals and Effect In Trade Competition

The Economics of Free Deals, by Leverett S. Lyon, assisted by Helen May Wheeler, cloth; 227 pages, 5 x 8¼ inches; published by the Brookings Institution, Washington, and supplied by STEEL, Cleveland, for $1.50, plus 15 cents for postage; in Europe by the Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The practice of giving something for nothing long has been an irritating competitive trade practice. The widely used free deal has stirred resentment and objection, even in those industries where it is most extensively employed, and has become the subject of much trade discussion and trade regulation.

This volume, which records the results of a special investigation under auspices of the Brookings Institution, discusses the place of the free deal in economic life, some of the applications of such deals to purchases and sales, the purposes and psychology of deals, and cost factors. A chapter also summarizes certain suggestions for codemakers.

The appendix includes the questionnaire which was sent to dealers, and a list of some of the products known to have carried deals.

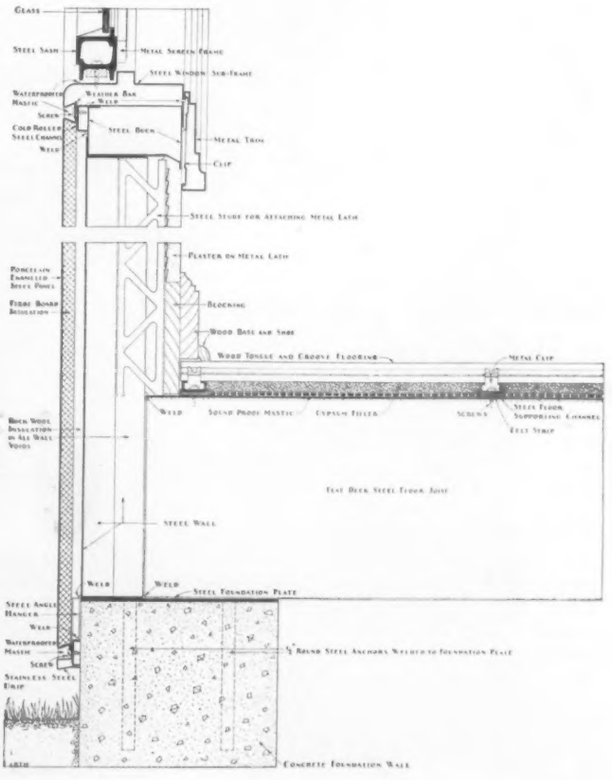


FIG. 2—Vertical section through exterior wall and side elevation of first floor joists. All floor and wall connections are arc welded

Making the Most *of* METHODS AND MATERIALS

Rubber Cushions Machinery Against Vibrations

VIBRATION dampeners making use of rubber are being employed successfully to dissipate vibrations of machinery. A 5000-pound industrial blower, for example, cushioned by eight ½-inch strips of rubber, operates with barely a sound. In principle, construction of the dampener is simple. Cushion strips of tough, live rubber are bonded by a special process to plates of brass-plated steel. The rubber-metal cushion is bolted to the machine and to the floor, leaving the rubber strips in shear between the two plates. Lower curved contour of the rubber cushion is designed to contact with the base progressively for building up resistance to heavy loads and shocks by placing the rubber under compression. Vibrations from the machine are dissipated and absorbed as the rubber yields under the shock, thus eliminating noise and protecting the machine.

S S S

Color Found To Be Factor In Shop Efficiency

A new trend is becoming apparent in interiors of industrial buildings, namely, the application of color similar to that employed in office and home. Investigation has revealed that several advantages accrue to the use of color. Light colored walls provide better vision, and through proper contrasts between walls and machines work is made easier, resulting in greater shop efficiency, lower unit production costs, and fewer rejections. In addition, safety is increased, as the brightness of the machine is a constant reminder to the operator to be on guard. Some might object that the color soon will be covered with oil and grease and be more unsightly than the regulation machine tool gray, but experience shows that oil and grease are observed readily and removed at once. In one instance where operators formerly required 2 hours once a week to clean their machines before light colors were applied, they now do the cleaning daily in a few minutes.

S S S

Stainless Steel Sheets Used In Welded Cooling Unit

Stainless steel is finding increasing use in the domestic appliance field. One application is cooling units for electric refrigerators. A type designed and adopted as standard by a principal maker utilizes 18-8 chrome-nickel sheets, formed and fabricated by resistance welding. The metal resists inside corrosion and its mill polished surface needs no further preparation outside. Use of the expensive alloy sheets is justified by savings in cost over former manufacturing practice.

S S S

Nickel Cast Iron Shows Long Wear in Guide Bushing

A large automobile builder finds that a heat treated alloy cast iron containing 3.25 total carbon, 1.25 silicon, 0.45 manganese, 2.00 nickel and 0.70 per cent chromium lends itself admirably to guide bushings for piloting the boring bar in cylinder boring operations. Previous to the adoption of the material for this application, a high-speed steel, heat treated to maximum hardness, was employed to prevent scoring and sizing. This material did not prove entirely satisfactory, since, when failure did occur, the boring bar was damaged and had to be repaired as well as the bushing replaced. With the cast iron bushings, failures due to scoring have been practically eliminated with much saving in boring bar repairs, while the ability of the alloy iron to resist wear

◆

BREW KETTLE STRETCHED TO DOUBLE CAPACITY: By arc welding, the Cream City Boiler Co., Milwaukee, enlarged this kettle in a local brewery from 50 to 107-barrel capacity. The spherical kettle was cut horizontally through the center and the upper half elevated; four $\frac{3}{16}$*-inch sheets, 66 by 84 inches, were inserted and lap welded over the exterior of the original kettle, as shown in the illustration. The sheets then were butt welded to each other. Electrodes and welding equipment, manufactured by the Lincoln Electric Co., Cleveland, were employed*

◆

on this job is better than that of the alloy steel.

s s s

Saws Need Correct Lubricant

Heat generated by cold sawing depends on the nature of the metal and speed of cutting. For hacksaws, handsaws and high-speed circular saws, a soluble oil is most satisfactory. For low-speed circular saws, a cutting oil is recommended. High cutting speed and low tool expense can be maintained only when a suitable coolant or lubricant is used.

s s s

Black Edge Enamel Sprayed On Unburned Ground Coat

Application of black edge on unburned ground coat is a problem of interest to all porcelain enamelers, because difficulty frequently is encountered. A stove manufacturer has worked out a method which is proving satisfactory. By suspending its ware on a continuous dryer 60 feet long, operating at 300 degrees Fahr., the company finds that one operator can spray 1000 square feet of stock per hour. By using just enough heat in the dryer to dry edges before reaching the sprayer, the danger of tearing has been eliminated and as the pieces return through the dryer to the opposite end, they are thoroughly dry. Instead of using dry spray, this manufacturer finds he can spray black edge on wet with the following set rule: 70 pounds of air; a black enamel made by regular ground coat formula with 2½ per cent of a good black oxide and testing 4½ drams residue from a 12½-ounce sample washed on a 200-mesh screen. The black is carried at 1¼ ounces per square foot, dry weight.

s s s

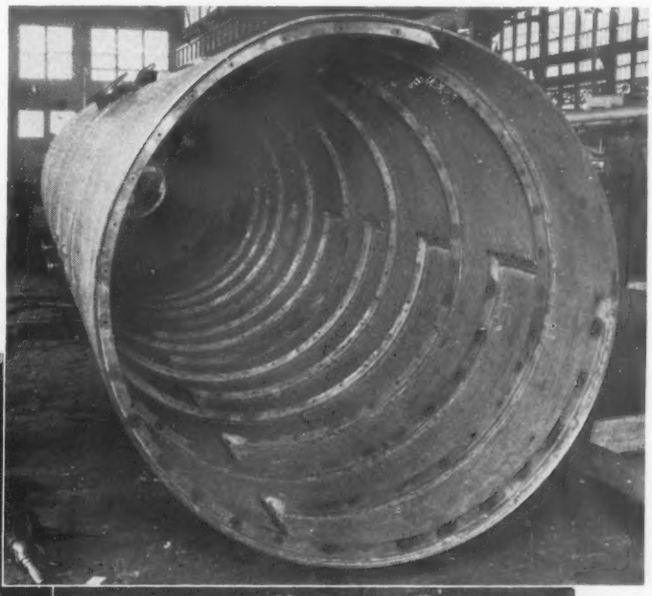
Brick machine wear plates of alloy cast iron containing 2 per cent nickel and 0.75 per cent chromium have delivered 150,000 bricks and still remained in service.

Welded Fractionating Tower Uses 20 Tons of Stainless Steel

STAINLESS steel, being employed on an increasingly wider scale for equipment requiring corrosion resistance, has found another application in the recent construction of a large fractionating tower for distillation of fatty acid. The tower, 58½ feet high and 6½ feet in diameter, was built by the Foster Wheeler Corp., in its Cleveland shops, arc welding being used in the fabrication. Upon completion, it was placed in service by a Chicago packer.

Twenty tons of 18-8 chrome-nickel steel, furnished by the Illinois Steel Co., Chicago, was required for the structure and its 29 bubble trays. Shell plates are ⅜-inch thick. Double-vee welds were used in making the horizontal joints.

The tower, shown in the accompanying illustrations, was construct-



THIS fractionating tower and its bubble trays are made of 18-8 stainless steel. It was built in two sections connected by welding when erected. At the right is an inside view of one section showing the angles on which the bubble trays rest; below is an overall view of the other section during welding operations

AT THE right are sections of the 29 bubble trays constructed entirely by welding; these trays rest on the angles shown in the view at the upper right

ed in two sections, which were connected by a welded butt strap joint upon erection. Bubble trays, also fabricated entirely by welding, rest on 2 x 2 x 3/16-inch angles welded to the inside of the vessel, these angles being clearly shown in the upper right-hand illustration. All welding was done by the shielded arc process using stainless steel electrodes manufactured by the Lincoln Electric Co., Cleveland.

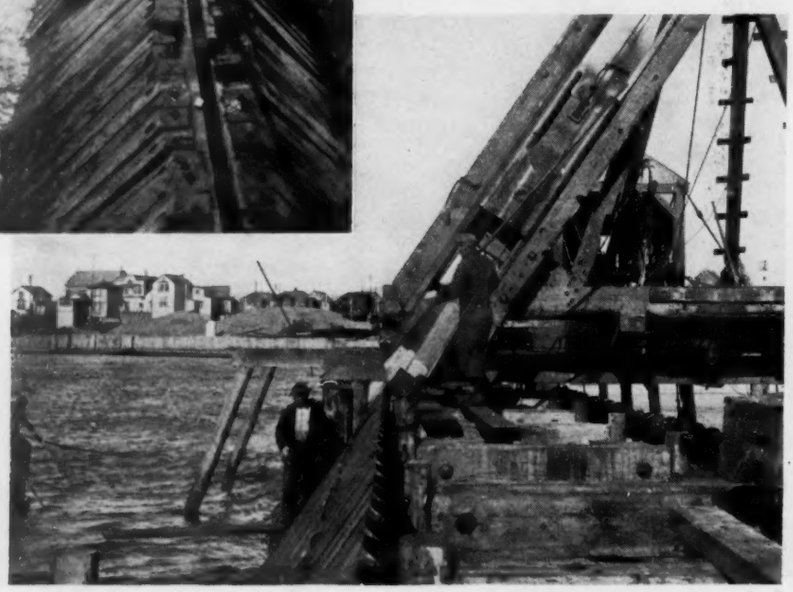
When completed, the tower was one-third filled with water and tested thoroughly under 25 pounds air pressure.

Interlocking Steel Sheet Piling on Jetty at Nome Staves off Arctic Ice

BY LIEUT. JOHN R. NOYES
United States Engineer's Office, Seattle

STEEL sheet piling has been used in a jetty of unusual design, recently constructed at Nome, Alaska, by the United States engineer at Seattle as part of the rivers and harbors improvement work at Nome. The structure replaces in part a timber jetty constructed on the same general plan in 1919 and 1920, which proved effective in combating ice action. The change to steel was made to insure greater strength and permanence together with decreased maintenance cost, and embodies a number of minor improvements in design developed as a result of experience with ice conditions in the vicinity.

Nome is situated in the northwestern part of Alaska on the northern short of Bering sea, icebound in winter. The season of navigation is from May 15 to Nov. 15. During the winter, ice forms in Bering Sea in vast floes several feet in thickness, entirely covering the water surface but moving continually under the action of winds and tides. Storms often result in sudden violent movement of the ice, which may occur in any direction, and if obstructed this movement results in the development of great pressures.



REINFORCING timbered jetty (left) at Nome, Alaska, with interlocking steel sheet piling to improve resistance to battering of winter ice. Piling was received in 34-foot lengths and driven (below) at a 34-degree angle to the vertical by means of a pile driver with swinging leads

No natural protection whatever is afforded by the configuration of the coast to vessels operating in the vicinity of Nome. The federal project for the improvement of Nome harbor was designed to create refuge harbor and unloading basin for small boats within the mouth of Snake river, an insignificant stream entering Bering sea at this point. The project provides for the construction of two short jetties, each 400 feet long, at the mouth of Snake river and for a dredged channel extending from deep water, through the mouth of the river, to a small turning basin adjacent to the town. Bank revetment was required to stabilize the dredged channel. All this work originally was timbered, since it was not certain whether the structures would be able to withstand the ice, and marine borers do not exist in the locality.

An experimental design was adopted for the jetties consisting of two rows of 10 by 14-inch squared timbers, 28 feet long, driven like piles on a 45 degree angle in opposite directions, so that the resulting structure had a triangular section, which it was believed would permit the ice to pass over it without damage.

Repaired and Extended

The sloped piles were driven with a specially constructed pile driver equipped with swinging leads to permit driving at a 45-degree angle. They were attached to waling held by a substructure of vertical piles driven in the conventional manner. A massive concrete icebreaker on a pile foundation was constructed at the outer end of each jetty.

The east icebreaker and 35 feet of the end of the east jetty were destroyed by ice in 1929, but aside from this the structures have stood up very well and have fully proved the adequacy of their design. Heavy masses of ice have many times passed over and piled upon the jetties without causing them any appreciable damage.

In 1933, it was desired to replace the destroyed portion of the east jetty and to extend the jetty 50 feet farther seaward. For reasons already explained it was deemed expedient to adopt steel sheet piling. In order to facilitate driving and to provide an open top of sufficient width to permit subsequent filling with dredged material from the channel, the driving angle was decreased from 45 degrees to 34 degrees and the two rows of piling placed 6½ feet apart at the top.

The concrete ice-breaker was

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omitted and instead a vertical wall of steel piling was driven across the end of the jetty, cut to conform to the slope of the sides, and strongly braced to the side walls. This it is believed will form a structure of adequate strength at less cost than the massive concrete block previously used. The substructure and bracing of the new work is of timber and generally similar to the old. Portions of both old and new construction are shown in one of the illustrations on Page 32.

The piling was supplied by the Pacific Coast Steel Corp., Seattle, a subsidiary of the Bethlehem Steel Co. The section is designed with a reversed interlock which puts all the webs in the same plane, a desirable feature in minimizing projections likely to offer resistance to ice. Lengths of 34 feet permitted a minimum of 14 feet of penetration in stiff gravel. In driving the eastern side wall a portion of the base of the old concrete icebreaker was encountered, but it was penetrated successfully by pointing the piles. About 175 tons of piling was required.

The work at Nome was under the supervision of Lieut Col. C. L. Sturdevant, army district engineer. Construction labor was under the direction of E. F. Bauer, associate engineer.

Electroplaters Will Meet In Detroit in June

The American Electro-Platers' society will hold its annual meeting in Detroit, June 11-14, with headquarters at the Statler hotel. The educational portion of the program includes five technical sessions at which 20 papers will be presented. Titles of the papers and authors are as follows:

Monday, June 11

AFTERNOON

"Summary of Researches on Plating at the Bureau of Standards," by Dr. W. Blum, bureau of standards, Washington.

"Complete Report of Exposure Tests on Plated Steel with Recommendations," by P. W. C. Strausser, research associate for American Electro-Platers' society, and Dr. W. Blum, bureau of standards, Washington.

"Plans for Investigating the Plating of Nonferrous Metals," by Dr. W. Blum, bureau of standards, Washington.

"Testing of Plated Metals for Compliance with Federal Specifications," by M. R. Thompson, bureau of standards, Washington.

Formal discussion of Mr. Thompson's paper by W. M. Phillips, General Motors Corp., Detroit, chairman, joint committee on specifications for plating.

Tuesday, June 12

MORNING

"Nickel Plating," by Ray Goodsell, Milwaukee branch, American Electro-Platers' society, Racine Plating Works, Racine, Wis.

"Bright Nickel Plating," by L. E. Eckelmann, Pyrene Mfg. Co., Newark, N. J.

"Relation of Coating Thicknesses to Service Life on Zinc Die Castings," by E. A. Anderson, New Jersey Zinc Co., Palmerton, Pa.

"Ductility and Adhesion of Nickel Deposits," by F. P. Romanoff, Apollo Metal Works, LaSalle, Ill. Paper presented before Electrochemical society, Asheville, N. C., April 26, 1934.

EVENING

"Detergent Properties of Alkalies, Part I, Plating Room Cleaners," by N. Promisel, research electrochemist, International Silver Co., Meriden, Conn.

"Pictorial Study of Plating Conditions," by W. M. Phillips, research engineer, General Motors Corp., Detroit.

"Does Chemical Control of Plating Solutions Solve the Electroplaters' Problems?" by G. B. Hogaboom, Newark branch, American Electro-Platers' society, research engineer, Hanson-Van Winkle-Munning Co., Matawan, N. J.

Wednesday, June 13

MORNING

"Recent Progress in Industrial Cleaning," by R. W. Mitchell, Magnus Chemical Co., Garwood, N. J.

"Plating Plant Layout," by A. J. Lupien, Detroit branch, American Electro-Platers' society, Udylite Process Co., Detroit.

"Copper Cyanide Plating, Its Peculiarities," by Elmer Woodmansee, Detroit branch, American Electro-Platers' society.

"Concentrated Cyanide Plating Baths," by Dr. L. E. Pan, United States Research Corp., Long Island City, N. Y.

AFTERNOON

"Rust Proofing Before Color Finishing," by R. R. Tanner, Metal Finishing Research Corp., Detroit.

"Rubber in the Plating Industry," by R. H. Kittner, American Hard Rubber Co., Akron, O.

"Some New Developments in Buffing Compositions," by G. M. Cunningham, National Oil Products Co., Harrison, N. J.

"Chromium Plating on Sheet Zinc," C. H. Proctor, New York branch, American Electro-Platers' society, founder of the society.

Critic of Recovery Act Would Suspend Experiment

Trade Associations and Industrial Control, by Simon N. Whitney, cloth; 237 pages, 6 x 9 inches; published by the Central Book Co., New York, and supplied by STEEL, Ceveland, for $3, plus 15 cents for postage; in Europe by the Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The author of this volume, who formerly was connected with the department of economics, Yale university, and attorney with the antitrust division, department of justice, believes the operation of the recovery act should be suspended immediately. While admitting that such judgment may seem premature until the program has had an opportunity to function for a longer time, he considers it a strange philosophy of government which, instead of first appealing to logic and experience, tries each plan suggested until it definitely succeeds or fails.

The text considers first the aim of the recovery act, the policy of industrial control, the recovery through controlled production, and the recovery through higher wages. It then discusses the American trade association movement, competition and industrial control and the impact of the antitrust law.

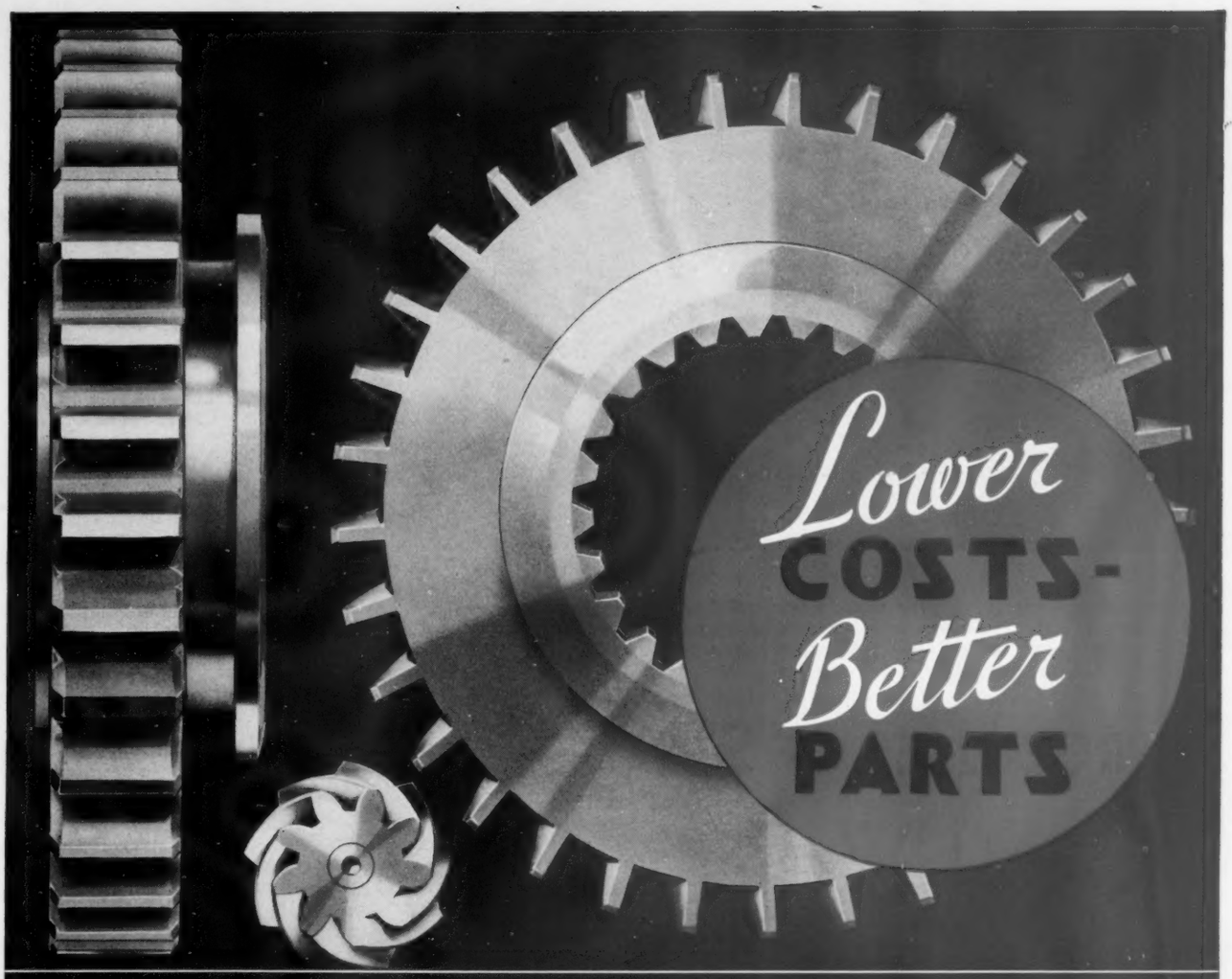
The author concludes that one element of the program which should not be overlooked is that free competition is the "second choice" of almost everyone. Organized business prefers competition to government control, and advocates of government control prefer competition to private combination. It is not unknown in history for a compromise, itself desired by no one, to carry the day.

Announces Second Course On Metal Radiography

St. John X-Ray Service Inc., 30-20 Thomson avenue, Long Island City, N. Y., announces a course on metal radiography to be given at its laboratory during the week of July 2, immediately following the annual meeting of the American Society for Testing Materials in Atlantic City in the last week of June. A similar course was conducted last summer.

Morning and afternoon sessions will be held each day except July 4. The program will include the physics of X-rays, X-ray tubes, production of X-rays, intensity of X-rays, quality of X-rays, absorption of X-rays, scattering of X-rays, diaphragms, center of tube, intensifying screens, correct exposure, strength of current, focus-film distance, thickness and nature of object, photographic process, under exposure, over exposure, defective film, reproducing negatives, contrast in negatives, wave length, screens, scattering, definition in negatives, double exposure technique, thickness determination, boiler code discussion, weld inspection, operating and cost data, gamma ray inspection, specification for casting inspection, interpretation of defects in cast steel, practical tests on castings and welded test plates, pressure vessel inspection, small casting technique, etc.

The theoretical part will be dealt with as briefly as possible and merely the influence of various factors upon results in a good negative will be demonstrated. The purpose of the course is to teach how to make and how to interpret radiographs. Use of equipment and materials is included in the initiation fee.



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More widespread use of mopping tanks has speeded up the cleaning of extensive floor areas in large buildings, and has created an outlet for about 100 tons of steel annually, used in construction of the tanks

LARGE USES OF STEEL IN SMALL WAYS

259th Article ◆ Mopping Tanks

DESIGN of maintenance equipment for use in various types of large buildings has been forced to keep pace with the increase in size of such structures. Cleaning work, for example, has been facilitated by the use of movable tanks which have replaced the scrub bucket to a large degree in mopping extensive floor areas. Using a tank, it has been found that twice the amount of work can be accomplished compared with that done when pail wringers are employed. Built almost entirely of steel, the manufacture of such equipment recently has accounted for the consumption of more than 100 tons of steel annually.

Mopping tanks are made in various sizes, capacities of the type illustrated usually ranging from 25 to 65 gallons and weights from 130 to 250 pounds. Smaller sizes, such as 15-gallon capacity, also are available as well as frames and wringers for accommodating ordinary scrub buckets. Units ordinarily are galvanized throughout to prevent corrosion, although special types for use in buildings during working hours are furnished with certain parts made of brass and with the steel tank itself surfaced with white porcelain.

The tank may be divided into two or three compartments for clear and soapy water and is mounted on a truck. Illustrated is a 60-gallon, two-compartment tank, 48 inches long, 28 inches wide and 38½ inches high, with tank, truck and wringer rolls made of steel. Tanks are fabricated from 16-gage galvanized sheets which are welded together. Seams are reinforced and nipples for draining connections are welded in the tanks. Tank edges are turned to prevent rust from forming when the container is resting on the truck frame.

Most Parts Galvanized

Trucks are made of steel flats and channels, riveted together and completely galvanized after fabrication. Three or four rubber-tired wheels are furnished, these being made of pressed steel and equipped with ball bearings. Wringer rolls, one of which is perforated, are 2⅜ inches in diameter, 11 inches long, and are made of 16-gage flat cold-rolled steel. After being perforated the roll is formed and the locking seam secured by close-fitting flanged steel heads pressed in each end. The roll is bridged, a flanged head being driven to the center. Roll shafts are made of 9/16-inch diameter cold-rolled steel, while wringer side arms are castings. Rolls are galvanized after being assembled.

Pressure between the two rolls is applied either by a foot step or hand lever. This mechanism, also made of steel, pulls down the perforated roll to the fixed roll for the wringing operation.

Program for Gear Makers Meeting Is Announced

American Gear Manufacturers' association announces details of its annual meeting to be held at the Penn-Lincoln hotel, Wilkinsburg, Pa., May 3-5. The meeting will open on Thursday morning, May 3, at which time President E. W. Miller, Fellows Gear Shaper Co., Springfield, Vt., will preside and present the president's address.

The annual banquet will be served on Friday evening, May 4, and upon this occasion Ralph E. Flanders, vice president, Jones & Lamson Machine Co., Springfield, Vt., will speak on "The Future of Private Enterprise."

Special sessions are set apart on Saturday morning, May 5, for discussion of the code, with H. H. Kerr, chairman of the code authority of the gear manufacturing industry presiding. Howard Dingle will speak on "Phases of the Recovery Act." The annual meeting of the code authority also will be held on Saturday, it is announced.

According to B. F. Waterman, Brown & Sharpe Mfg. Co., Providence, R. I., chairman of the program committee, papers scheduled for the various technical sessions are as follows:

"Economical Advantage of the Single Helical Gear," by R. S. Marthens, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Controlling Costs and Employe Compensation," by W. A. Barr, Foote Bros. Gear & Machine Co., Chicago.

"A. G. M. A. Speed Reducer Rating Formula and Its Development," by W. P. Schmitter, Falk Corp., Milwaukee.

"Recent Development in Gear Steels," by T. R. Rideout, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Selling Gears to Special Fields," by L. A. Graham, Falk Corp., Milwaukee.

"Noise Measurement of Gears," by Prof. F. A. Firestone, University of Michigan, Ann Arbor, Mich.

"Uniformity in Commercial Standards," by E. S. Sawtelle, Tool Steel Gear & Pinion Co., Cincinnati.

"The Machine Hour Rate—Its Importance and Computation," by Prof. C. L. Van Sickle, University of Pittsburgh, Pittsburgh.

ADVERTISING PAGES REMOVED

PROGRESS IN STEELMAKING

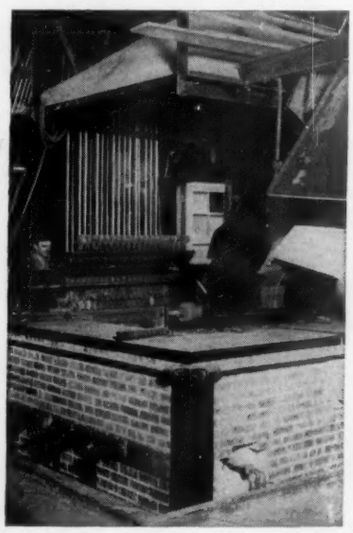
HANDLING bundled sheets is facilitated by a recently developed loading truck. The platform normally is in a horizontal plane, which permits the bundles of sheets to be loaded direct from cranes. The work then is taken into box cars and unloaded by inclining the platform and allowing the sheets to slide to the car floor. The rate of transfer of the sheets from the truck to the floor is controlled by cables and winches.

♦ ♦ ♦

Facing with abrasive-resisting alloys the tip of hooks used to skull iron and steelworks ladles increases their life 500 per cent.

♦ ♦ ♦

Steel stacks for conducting away the exhaust gases from internal combustion and diesel engines deteriorate rapidly because of the extremely high temperature of the gases. Good protection is afforded by spraying the interior of these stacks with molten aluminum. A steel company which uses several large gas engines to drive compressors furnishing air for blast furnace operation coated one of its stacks with aluminum, utilizing the oxyacetylene spray torch. At the end of two years the stack was still in good condition and the company decided to treat other stacks in the same manner.



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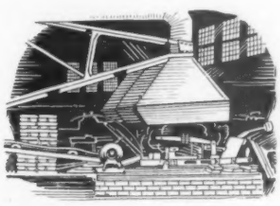
Clinkered dolomite refractories now are being treated with tar by a recently devised process. The product resists the disintegrating action of air and water; slaking is retarded and the small grains tend to coagulate. The dust, which usually arises when the product is handled, is eliminated by the tar treatment.



CONSTITUTING a radical departure in the ring of galvanizing pots is a new system which utilizes the advantages of luminous flame combustion by the application of diffusion burners. The maximum amount of heat is placed at the uppermost part of the pot where the heat losses are the highest because of surface radiation of the molten zinc. Combustion takes place slowly and softly, eliminating hot spots. Two burners are employed, one on either side, the gases from each passing through three ducts before going out the flue. At a plant where this type unit replaced a coke-fired installation, the amount of dross was reduced one-third, the rate of heat transfer into the kettle increased, fuel consumption lowered, kettle life extended, and overall cost per ton of work produced was decreased.

♦ ♦ ♦

Continuous indication of the percentage reduction given strip steel in a reversing mill is the purpose of a recently marketed instrument. The unit makes use of the fact that the ratio of the speed of the strip on the exit side to the entering speed varies with the percentage reduction in gage effected by the mill. If the delivery speed, therefore, is 25 per cent faster than the entering side, the reduction is 25 per cent. The strip on each side of the mill rides over a roller whose speed, therefore, is proportional to the speed of the work. To each of these rollers is coupled a small generator which are excited from the same source. Their armatures are connected to two different windings of a special meter which indicates the ratio between the voltages of the two machines. The meter is calibrated in per cent draft and affords the operator a continuous indication of the reduction being made in the strip while in the mill. The device not only permits the rolling of uniform strip but saves the time required to micrometer the work by hand.

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Tensile tests made at elevated temperatures and with the load applied slowly show that, for rail steel of medium carbon content, the temperature at which secondary brittleness occurs is somewhat lower than when the load is applied more rapidly.

♦ ♦ ♦

The rod and wire mills of a large steel company were forced out of operation when its 3000-horsepower corliss engine broke down. A series of four cracks had developed at the high-pressure end of the main base plate which is flanged and to which the high-pressure cylinder was bolted. These cracks, resembling fatigue cracks, extended up and approximately two-thirds around the circular end of the bed plate casting, which at the high-pressure end was 42 inches in diameter and 2½ inches thick. Repair was undertaken by oxyacetylene bronze welding. The job was a most difficult one but was accomplished successfully in less than two days. Approximately 700 cubic inches, or 220 pounds, of bronze was deposited. It was estimated that the repair had effected a saving of about $20,000.

The Plastic Forming Of Metals

By PROFESSOR DR.-ING ERICH SIEBEL
Translated by JOHN H. HITCHCOCK

Part III—Investigations of Distribution of Deformation and Stress in Technical Forming Processes

3. Distribution of Stress in Forging and Rolling (Continued)

SIMILAR phenomena of flow are observed in forging in the form of the forging crosses on the lateral surfaces of the bar, in which a pronounced flaking and a temperature rise can be observed during the blow in such zones. Under certain conditions, even separations of material can occur in such slip planes. For purposes of comparison, it is not essential that cold forming processes be considered in the tests, as long as only a qualitative judgment regarding the stress relations is to be formed, rather than an exact determination of the stress distribution.

Effect Is Limited

The first case described corresponds to forging under a light hammer having narrow dies. As Fig. 148 shows, the forging effect can penetrate only to a limited extent into the core of the forged bar. The deformation proceeds at these points only under the formation of severe tensile stresses in the longitudinal direction, which can constitute the cause of cracks. If forging is carried out with dies, which are wide in comparison to the thickness of the bar, as shown in Fig. 150, compressive stresses in the longitudinal direction, produced by the die friction, predominate throughout the region gripped by the dies. This leads to more pronounced spreading and to deformation losses which can be avoided if the die is made slightly narrower. As Fig. 151 indicates, satisfactory penetration of the forging effect can be achieved without trouble, if the die is chosen correctly, without involving the disadvantages which are to be expected with too wide a die.

The rolling process differs from the simple forging process in the respect that the velocity of compression in this case is no longer the same at each part of the contact region, but drops from a maximum at the point of entrance of the bar to zero in the plane of the rolls. Speaking abstractly, systems of slip lines must occur in the rolling process which are similar to those found for the forging process (Figs. 147 and 148), because the loading relations

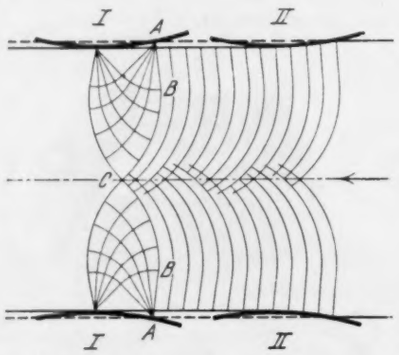


Fig. 154—Formation of slip planes during rolling

in the two cases are approximately the same. Because of the peculiarity of the rolling process just described, however, it is assumed that the deformation proceeds primarily in the slip planes which originate momentarily at the forward corner of the region of contact. The deformation accordingly follows in such a manner that the slip line, ABC, in Fig. 154 is displaced forward with the progress of rolling, and is continually newly formed, while the remaining slip lines of the system become much less pronounced. Fig. 155, which is borrowed from the work of H. Meyer and F. Nehl[42], reveals the described phenomena of flow in convincing fashion, for cold rolled steel bars which were subjected to only a slight reduction by rolling.

The discussion regarding the distribution of stress in the forging process also can be applied, with proper modification, to the rolling process. If the roll diameter and the reduction are small, the rolling effect can penetrate only imperfectly into the interior of the bar, and it must be accompanied by the formation of longitudinally-directed tensile stresses in the heart of the material. For the production of the required degree of penetration, it is necessary that the roll diameter and the reduction of thickness of the bar be adapted to each other. On the other hand, if the roll diameter is chosen too large in comparison to the thickness of the rolled material, the elongating effect of the rolling is jeopardized by the compressive stresses in the longitudinal direction, which are produced as a result of the frictional influences. Increased spreading and high deformation losses are the result.

Problems Are Three Dimensional

As previously mentioned, rolling and forging are usually not plane problems, but are three-dimensional problems with respect to stress and deformation. The rudiments of the knowledge of the process of spreading are the compression tests on rectangular parallelopipeds of lead, between plane and parallel dies, the results of which are reproduced in Fig. 156. The outflow of the displaced material can occur throughout only in the direction in which the least resistance to flow is exerted. The originally rectangular cross section in the plane of compression

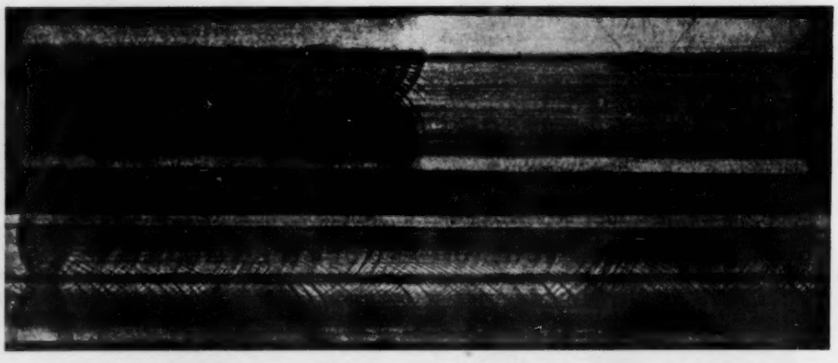
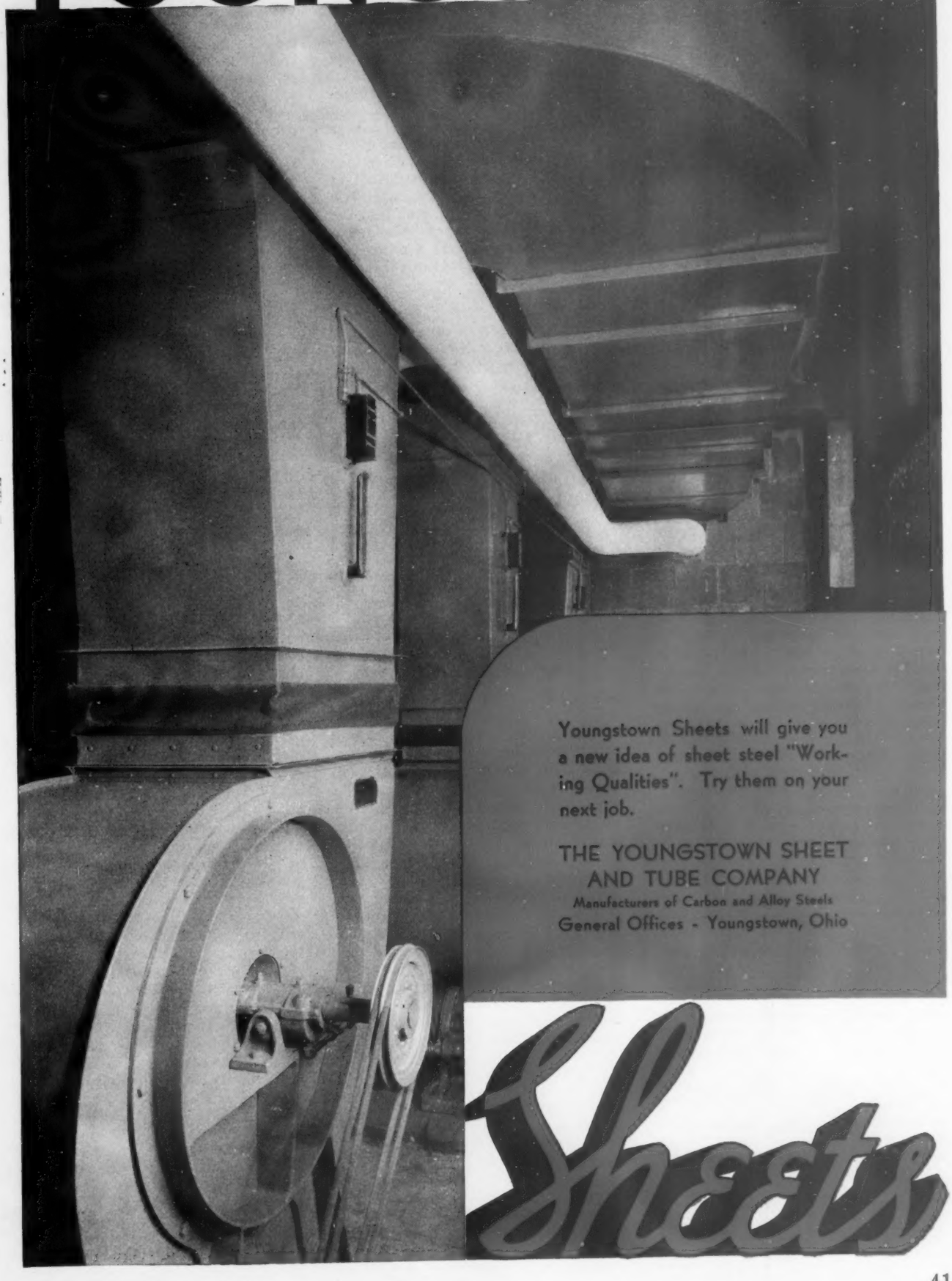


Fig. 155—Formation of slip planes in cold rolling of mild steel bars (according to Meyer and Nehl)

YOUNGSTOWN



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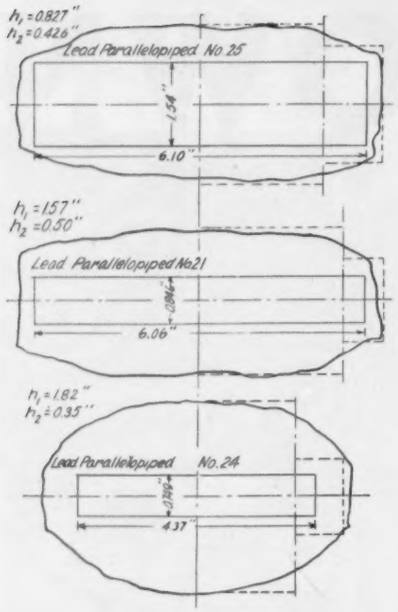


Fig. 156—Flow of material in compression of a lead bar of rectangular cross section

is transformed gradually with advancing compression into a circular-shaped cross section; because the material at the ends of the rectangle can flow out both into length and width, whereas that along the broad sides can flow only in the direction of width.

The phenomena of flow remain almost the same if a bar provided with lateral notches, as shown in Fig. 157, is forged under the hammer or rolled step by step. The parts of the bar separated by the notches can reach the circular form without restriction, during which the lateral notches become spread wide open.

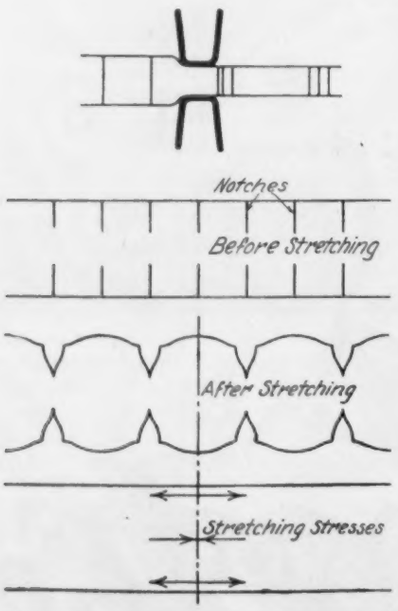


Fig. 157—Test with a notched bar in drawing-out by forging

The relations are changed fundamentally, however, as soon as the notches are omitted, so that the approach toward the circular form is prevented by the cohesion of the material. Tensile stresses then must be formed in the edge zones of the bar, and corresponding compressive stresses must arise in the central zones, all acting in the longitudinal direction, to prevent these separations. In fact, these stresses must be higher, the greater the resistances are which oppose the flow of material in the longitudinal direction; that is, the greater the coefficient of friction and the length momentarily compressed, and the smaller the thickness of the bar. The edge stresses therefore exert a noticeably injurious influence in the rolling of steel strip, sheets, and metal foil, where they produce cracks at the edges if the cohesion of the material no longer can resist the resulting tensile stress.

The previously described methods of investigation can serve only for a qualitative determination of the distribution of stress in forging and rolling. A quantitative measurement of the stress distribution accordingly would signify a great advance. For the determination of the condition of stress in purely elastic deformation, a whole series of measuring processes is known to be available, all of which are based upon the fact that the deformations and stresses in this elastic condition are related definitely to one another. All of these processes are useless for investigations in the plastic region, because the prerequisites for their applicability do not exist here. More recently, however, the distribution of stress in rolling, along the area of contact between the rolls and the rolled material, has been determined directly with a piezo-electric measuring instrument, by means of which the region of contact can be explored[32].

An example of the pressure distribution in the region of contact, determined in this way according to tests by W. Lueg, is reproduced in Fig. 158. It deals with the rolling of a copper strip 0.118-inch thick and 1.18 inches wide, in a cold mill with 7.09-inch diameter rolls. It is perceived that the compressive stress reaches its highest value in the vicinity of the point of delivery, and decreases toward both sides from this point in the longitudinal direction. The distribution of pressure in the transverse direction, however, is also nonuniform. In fact, the pressure is greatest at the center of the bar and decreases toward the edges. Because the production of the plastic condition requires a principal stress difference equal in magnitude to the deformation strength of the material concerned, the distribution of the longitudinal stresses also is found at the same time by means of the pressure distribution in the region of contact. The occurrence of tensile stresses at the edges of freely-spreading strips thus is demonstrated conclusively.

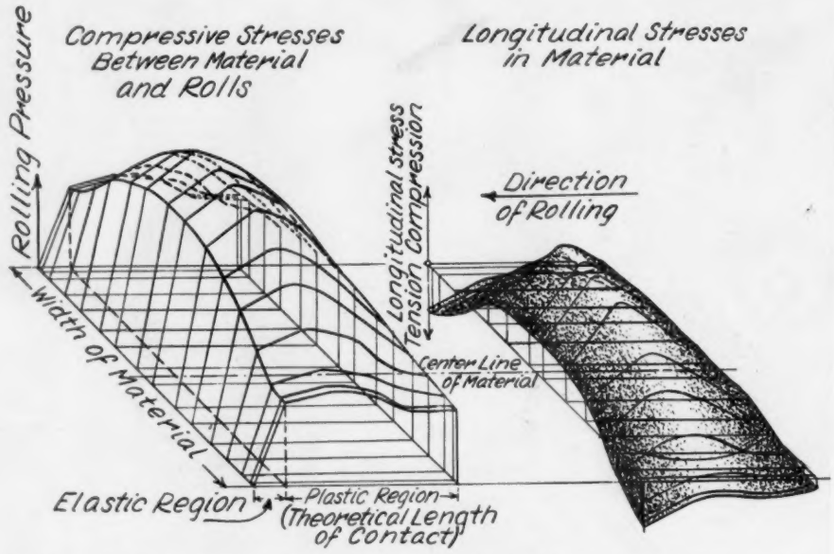


Fig. 158—Distribution of pressure in region of contact between bar and rolls

Distribution of pressure in the region of contact, determined by means of measurement, agrees well with the theoretical considerations which were carried out in Part II, and permits a far-reaching insight into the reciprocal effect upon the phenomena of flow. The displacement of the rolled material relative to the rolls at each point of the region of contact is such that the material moves away from points of higher pressure toward points of lower pressure. The line of highest pressure in the vicinity of the plane of delivery accord-

ADVERTISING PAGES REMOVED

ingly corresponds to a neutral plane from which the displaced material flows out toward both sides. Thus, a backward movement of the rolled material occurs at the entrance side, in comparison to the peripheral velocity, and a forward slip, on the other hand, occurs at the delivery side. The decrease of pressure toward the edges of the strip in the region of contact produces, finally, the lateral spreading of the rolled material. The familiar phenomena of flow therefore are explained by the measured distribution of pressure. As the cause of the described pressure distribution, on the other hand, the resistances, which oppose the outflow of the displaced material in the region of contact, were recognized.

(To be continued)

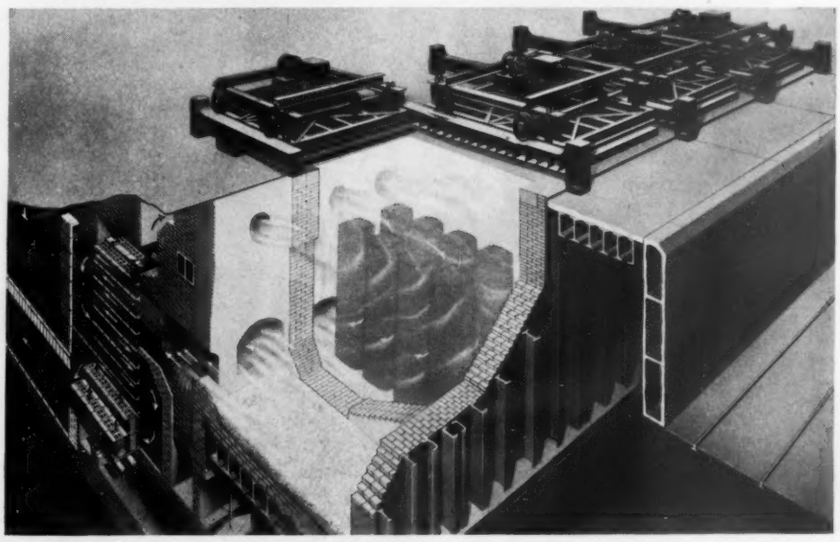
Soaking Pit Furnaces of One-Way Type Will Serve Eastern Steelworks

SOAKING pit facilities at the Worcester, Mass., plant of the American Steel & Wire Co., which includes six 1-hole reversing-type pits fired with producer gas, are being replaced with eight new pits each with a holding capacity of six 3-ton ingots. The new pits, furnished by the Surface Combustion Corp., Toledo, O., are of the one-way fired design and are being installed in line to facilitate charging. Fuel oil will be used to fire the units.

Gases enter through ports located near the top of one sidewall, making a horseshoe bend and leave through outlets at the bottom of the same sidewall, passing through a Stein refractory tile recuperator on their way to the atmosphere. A cross section of a pit of this type is shown in the accompanying illustration. On account of the combustion space available above the ingots, pits of this type lend themselves to oil firing.

Each pit cover is suspended from a carriage on which the motor and operating mechanism are mounted, thus making available several square feet of floor space compared to conventional design. Individual control panels, assembled on a master panel along with other instruments and auxiliary equipment, are provided to simplify operation.

Pits of the one-way fired type recently have been installed at the Indiana Harbor, Ind., division of Youngstown Sheet & Tube Co. Other steelmakers operating this type pit include Republic Steel Corp., with 13 holes, Illinois Steel Co. with 20 holes, John A. Roebling's Sons Co. with eight holes, and Corrigan, McKinney Steel Co. with seven holes.

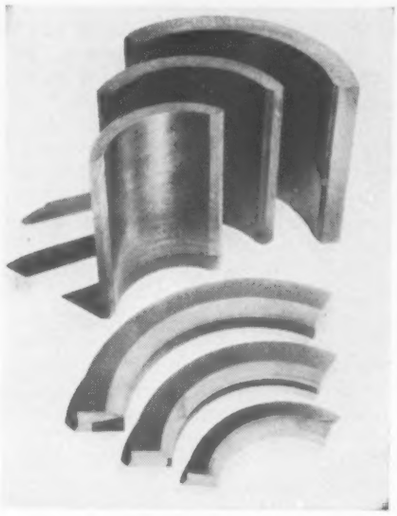


Oil-fired one-way type soaking pit designed with a refractory tile recuperator

Improved Fabric Bearings Reduce Rolling Costs

Water is the only lubricant recommended for an improved line of fabric roll-neck bearings recently announced by the General Electric Co., Schenectady, N. Y. To insure an ample supply of water, it has been found desirable to use two sprays, one at the "leaving" side of the bearing for cooling, and one directed into the chamfer on the "entering" side for lubrication.

One grade, designed for plate, blooming, rail or structural mills is a graphite filled, fabric base material with an extra heavy 4-ply interwoven fabric. Another grade suitable for rod, bar, skelp, and merchant mills uses a medium weave fabric. On the finishing stand of an 18-inch sheet bar mill this type bearing is said to have averaged over 100,000 tons of rolled material. The running light power input on a 10-inch rod mill finishing stand equipped with another grade was reduced 60 per cent and the input with steel in the mill was reduced 44 per cent, as compared with the bearings formerly used.



Graphite-filled, fabric-base roll neck bearings and liners

Range of capacities of these bearings covers cylindrical segments in sizes from 5 inches inside diameter to 30 inches outside diameter with any desired wall thickness, any arc contact up to 180 degrees and any length up to 28 inches.

Inspects 4-High Mills

Officials of Acieries et Forges, Firminy, France, are considering engaging in the manufacture of tin plate using a Steckel-type hot mill and numerous cold mills of this type. P. Blain, chief engineer, and M. Thomas, works manager of the French company, and P. Damiron, Paris, France, have just completed an inspection of many of the various kinds of hot and cold mills in this country scheduled on the production of black plate for tinning. A study of the Steckel hot and cold mills also is being made by G. L. T. Sterkey of Fagersta Bruks Aktiebolag, Sweden.

NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

Helmet—W. W. Sly Mfg. Co., 4704 Train avenue, Cleveland, recently developed a helmet that safeguards the wearer against inhalation of injurious dusts, fumes, smoke, etc. Air entering the helmet is cleaned, cooled and deodorized as it passes through a filter and purifier that is furnished as part of the complete unit. The helmet hood extends over the shoulders, chest and back of the wearer, being held in position by adjustable straps and hooks which are fastened to a belt.

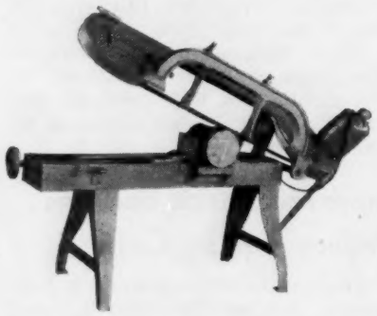
A large single window, permitting wide vision, is covered by glass tightly sealed against a sponge rubber gasket and held in place by a metal screen that slides in grooves. This screen protects the glass from impact of rebounding abrasive in pressure blasting operations. For welding inside of tanks or in other confined places where the operator is subjected to smoke and fumes, the helmet is furnished with a hinged dark glass over the clear glass and with a hood of leather instead of rubber.

♦ ♦ ♦

Disk Straightening, Burnishing and Surface Rolling Machine—Sutton Engineering Co., Park building, Pittsburgh, recently built a No. 00 disk type straightening, burnishing and surface rolling machine, shown herewith. The unit was designed in connection with one of the large automobile manufacturers during the development of the new knee action spiral front springs. Its purpose is to remove all surface notches and grinding scratches from the spring rod prior to heat treatment in order that breakage will not occur as a result of a surface imperfection. Surface rolling and burnishing speed of this machine is 100 feet per minute. The unit also is of value where plating of any kind is to be done on metal rod requiring a highly finished surface. In addition to burnishing and surface rolling, the machine does accurate straightening on small sizes of tubes and rods. It has the advantage of straightening pieces of practically any length down to three or four inches.

♦ ♦ ♦

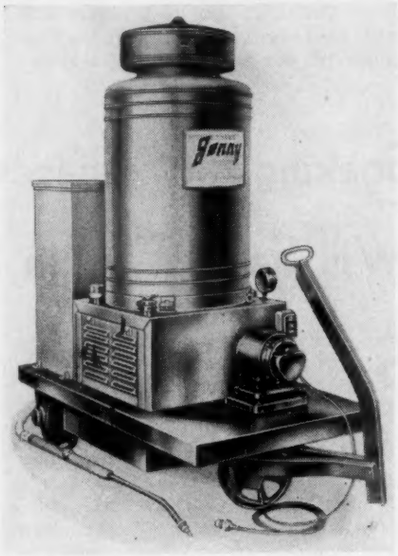
Metal-Cutting Band Saw—Wells Mfg. Corp., Three Rivers, Mich., is introducing a band saw especially designed and built for metal cutting. The unit, shown herewith, is made in two sizes, 4-inch and 8-inch. It is portable and power can be obtained from any lighting or power socket. Power consumption is small and operation involves only the simple clamping of the work in a vise and turning on the switch. Gravity feed is automatic. The start and stop lever is at a convenient place for the operator to reach when the vise is tightened. When the cut is finished the machine shuts off the current automatically. An outstanding feature is its ability to cut hard or soft metals of any shape, including thick or thin tubing. The saw is suitable for maintenance work, general metal cutting in stockrooms or toolrooms, and for production work where large quantities of duplicate pieces are to be cut.



Wells band saw for high-speed cutting of any metal

♦ ♦ ♦

Cleaning Machine — Homestead Valve Mfg. Co., Corapolis, Pa., has brought out a new model D high pressure jenny, shown herewith. Steel mills, other mills, power houses and similar industrial plants are using the apparatus for removing accumulations of heavy grease and smudge from machinery, for cleaning walls, floors, ribbed glass windows, etc. When mounted on a hand truck the portable device can be moved from place to place with a minimum of effort. Water and fuel tanks are carried on the truck and an electric connection is all that is needed for operation.

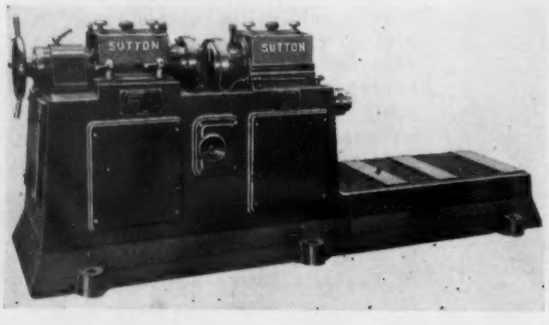


Portable cleaning machine built by Homestead Valve Mfg. Co.

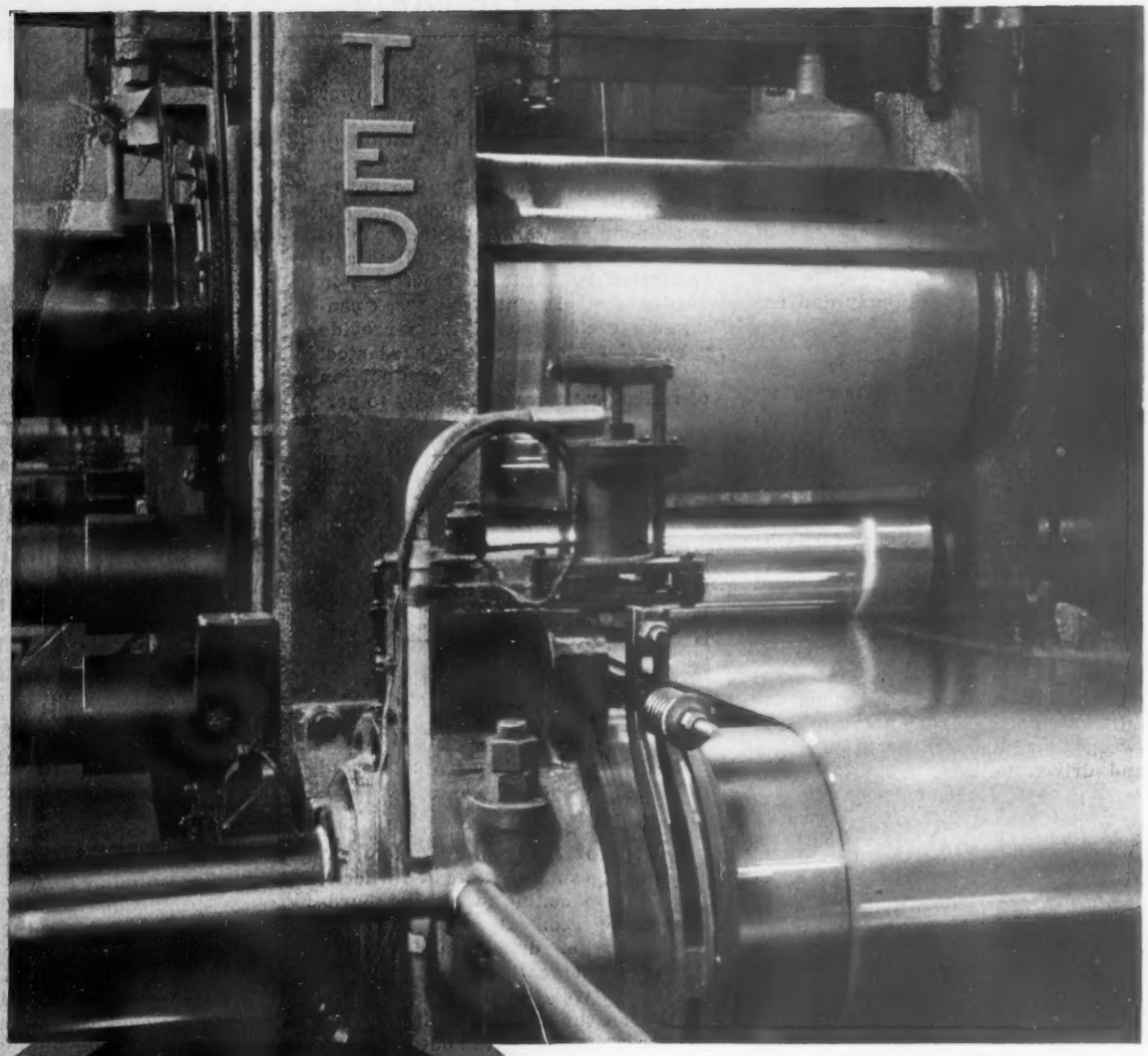
Water at 200 degrees Fahr. strikes the air with a nozzle pressure up to 175 pounds per square inch and flashes into a spray which is neither steam nor water but a combination of both. This spray pelts the area to be cleaned with fine globules of water, much like sand in an air stream, but without the abrasive effect of sand. Where detergents can be introduced into the feed water the cleaning is accomplished in one operation. This process is used in most instances.

♦ ♦ ♦

Arc Welded Locomotive—Differential Steel Car Co., Findlay, O., is manufacturing a new locomotive for mines, steel mills, industrial plants, etc. The unit consists of an internal combustion power plant mounted in an underframe capable of carrying an automatic dump body. The design permits either diesel or gasoline power and either mechanical or



DISK type straightening, burnishing and surface rolling machine manufactured by Sutton Engineering Co. Surface rolling and burnishing speed is 100 feet per minute



72" 4-HIGH CONTINUOUS COLD STRIP MILL

A complete installation by United which included magnetic uncoiler, motor-driven coil box, mechanical sticker, guide equipment, automatic reel guides, heavy duty reel, entry clipping shear, and flying shear. In successful operation at the Otis Steel Company, Cleveland, Ohio.

UNITED

ENGINEERING *and* FOUNDRY COMPANY

PITTSBURGH — PENNSYLVANIA

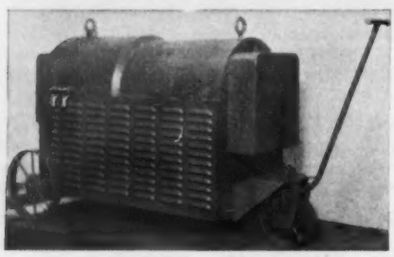
electrical drive. An interesting feature is the fact that the tractive effort required is automatically regulated. The dump body has a level load capacity of 24 cubic yards and a normal crown capacity of about 40 cubic yards. It is made entirely of steel and is heavily reinforced. Electric arc welding is employed in the fabrication of both the body and the frame.

♦ ♦ ♦

Varispeed Upright Motors—Sterling Electric Motors Inc., Telegraph road at Atlantic boulevard, Los Angeles, has added a new upright enclosed design to its line of varispeed motors. The new unit is available in ratings up to 15 horsepower. Standard variations, adjustable by infinite degrees, are 2:1, 3:1 and 4:1. The upright model operates on the same principle as the units previously introduced. A high-speed V-belt runs on two pulleys, the diameters of which can be adjusted infinitely to give different ratios between the diameters of the driving and driven pulleys.

♦ ♦ ♦

Welder—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has developed a new 400-ampere direct-current welder driven by a 25-horsepower, 230 volt, direct-current motor. This machine, shown herewith,



Side view of Westinghouse 400-ampere direct-current welder

is of the unit frame construction. The polarity is reversed easily by simply turning a simple thumb switch. The unit was designed for either bare or coated electrode service. In working out this design, the heavy service required in steel mill and shipyard production has been kept in mind by the design engineers.

♦ ♦ ♦

Variable Speed Transmission—Link-Belt Co., 910 South Michigan avenue, Chicago, is announcing a self-adjusting, positive variable speed transmission for fractional horsepower drive. The unit, shown herewith, is capable of a horsepower output of one-half at maximum speed, with a maximum ratio of speed variation of 10 to 1. The chain employed in transmitting the power from the input to the output shaft is a side-contact roller chain, consisting of steel links, made endless and connected by hardened steel pins in hardened steel joint bushings. Openings in each pitch of links provide a pocket for each of two hard steel rollers, and from both sides a portion of roller protrudes sufficiently to permit each pair of chain rollers, at each engagement of chain and wheels, to roll into contact with the hardened steel conical opposed disks forming the driver and driven wheels, until finally the chain is engaged positively in the wedge-shaped wheels at the proper pitch line for the speed desired on the output shaft. Disengagement of the chain also is a rolling action. The transmission is furnished with horizontal or vertical box; with or without reduction gearing; and can also be supplied motorized, with the motor forming an integral part of the unit.

Link-Belt self-adjusting variable speed transmission

♦ ♦ ♦

Chain Grate Stoker—Combustion Engineering Co. Inc., 200 Madison avenue, New York, has modified the design of its natural draft chain grate stoker in order to provide for fixed attachment of controls, a frame construction capable of coping with expansion, and simple conversion to forced draft desired. Instead of a cast iron frame supported on wheels as formerly employed, the new design has a stationary structure fixed into the setting. This consists of transverse channels supported on posts at either side, to which, in turn are fastened angles parallel to the side walls; skids supported on I-beams carry the weight of the chain at the bottom.

With natural draft, zone control may be applied, if desired, by placing louvre dampers between the channels in one or more compartments. Where conditions make it desirable to change to forced draft, this can readily be accomplished by substituting forced draft links, adding dampers and installing an internal seal and hood at the front.

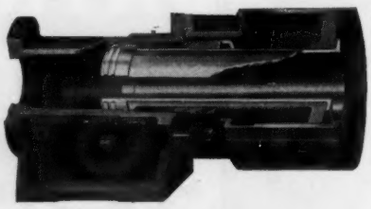
♦ ♦ ♦

Lowering Relay for Cranes—Harnischfeger Corp., Milwaukee, is marketing a new high-speed lowering relay for cranes. It consists of a single-pole, single-throw knife switch and a spring closed contactor below which are a normally opened circuit relay and a standard two-pole control circuit relay. This device can be applied to any direct-current motor-operated crane equipped with series motors and dynamic lowering control. The unit is entirely automatic, being controlled only by the weight of the load itself. When the load is heavier than about one-third capacity, the relay automatically prevents speed increase. With the device the lowering speed of a hoist drive is increased without reducing the safety factor or minimizing accuracy of control.

♦ ♦ ♦

Expansion Joint—American District Steam Co., North Tonawanda, N. Y., is placing on the market a piston ring expansion joint, shown herewith. Through an adaptation of the piston ring idea, similar to that used in gas engines, the line pressure in steam or other piping equipped with the new expansion joint is prevented from reaching the stuffing box during the repacking operation. Complete repacking of the joint thus is permitted while the line is operating under full pressure.

Two piston rings are mounted in a piston head securely attached to the inner end of the slip. Back of the



Expansion joint developed by American District Steam Co.

piston head is a relief chamber vented by piping leading away from the expansion joint. When it is necessary to repack the joint, a valve in the vent piping is opened and the pressure between the piston head and stuffing box relieved.

Steel Rate Rises Sharply on Heavier Releases

Fifty-five Per Cent Highest Since Last July—Increasing Consumption for Automobiles, Rails and Car Equipment—Pig Iron Shipments Doubling Last Month's

STEEL demand continues to gain momentum, not only from the expediency of consumers' price advantage, but also from actual acceleration in consumption.

Supporting a four-point rise to 55 per cent in the national steelworks operating rate last week —highest since last July—were heavier shipments to automobile manufacturers, whose production schedules are mounting; a larger volume of buying by railroads and equipment makers; broader structural steel and miscellaneous manufacturing activity. Strikes in the automobile industry are losing force, and the belief is growing that rational labor policies will predominate in Washington.

It is becoming more evident that if all the steel tonnage contracted for prior to recent price advances is delivered before July 1, as the steel code prescribes and as consumers apparently desire, steel output must for some time show a steady upward movement. With some fears that delivery may become a problem, steelmakers are urging users to co-operate by releasing material as early as possible; as a result of which leading consumers are beginning to issue specifications for June.

This week price adjustments to the higher levels will be practically completed, with steel pipe announced for an advance of $6 to $7 a ton; reinforcing bars, $3, in addition to those previously noted in STEEL. Contracting began to subside last week, and the industry's chief concern now is to insure a steady flow of shipments to avoid complications in June. Some producers have withdrawn from the market for the present on cold-rolled sheets, strip and bars.

Pig Iron Production Also Rising; Carriers Rounding Out Their Rail Purchases

This demand for steel is reflected in increased production of pig iron and preparations for lighting additional blast furnaces. Lake furnace interests have more tonnage on their books than at any time since the beginning of the depression, and expect shipments this month will be double those of March. Steelmakers themselves covered for heavy tonnages of scrap, and with the beginning of water transportation the tone of the scrap market is easier.

Railroads placed approximately 65,000 tons of rails and fastenings, including 25,000 tons of rails and 10,000 tons of fastenings for the New York, New Haven & Hartford; 10,000 tons of rails for Norfolk & Western; 12,000 tons of fastenings for Chesapeake & Ohio and Nickel Plate. The price of standard rails holds at $36.37½ for the present, but shipments at this figure must be completed by the close of June, instead of Aug. 31, as formerly stipulated. Great Northern is inquiring for 6500 tons of steel for car repairs.

Featuring the market for structural shapes is the larger number of small awards, amounting for the week to 14,600 tons. March bookings were the heaviest of any month this year, and tonnage now on books for fabrication is estimated as 13 per cent larger than at this time last year. St. Louis has awarded 10,000 tons of plates for a water pipe line; 13,000 tons of plates are on inquiry for gas holders in various cities. The navy is preparing specifications for one heavy and three light cruisers which will require a substantial tonnage of plates and shapes; the navy also has awarded 500 tons of stainless steel, one of the largest orders for this material ever placed.

Steel Rates Up in All Districts Except South; Pittsburgh Scheduled Higher This Week

Last week steelworks operations rose 4 points to 43 per cent at Pittsburgh; 4 to 54, Chicago; 12 to 94, Detroit; 11 to 89, New England; 7 to 57, Buffalo; 5 to 74, Cleveland; 4 to 73, Wheeling; 1½ to 40, eastern Pennsylvania; and 3 to 60 per cent, Youngstown. Birmingham remained at 52 per cent. The Pittsburgh rate is scheduled for 45 per cent this week.

STEEL's London cable states that through reorganization of the British Iron and Steel Federation a continuation of the 33 1/3 per cent import duties is assured, pending further steps in accord with the government's plan for aiding the industry.

Pending further price advances to take effect this week, STEEL's iron and steel price composite remains $34.77. Due to a counter filing on plain wire, effective April 20, which reduced the amount of the previous advance, the finished steel composite is adjusted to $54.80, while the scrap index remains $12.21.

COMPOSITE MARKET AVERAGES

	April 21	April 14	One Month Ago March, 1934	Three Months Ago Jan., 1934	One Year Ago April, 1933	Ten Years Ago April, 1924
Iron and Steel Composite	$34.77	$34.77	$32.40	$32.42	$28.16	$42.33
Finished Steel Composite	54.80	54.90	51.10	51.10	44.94	65.93
Steelworks Scrap Composite	12.21	12.21	12.30	11.24	7.23	14.58

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	April 21, 1934	Mar. 1934	Jan. 1934	April 1933
Finished Material				
Steel bars, Pittsburgh	1.90	1.75	1.75	1.60
Steel bars, Chicago	1.95	1.80	1.80	1.70
Steel bars, Philadelphia	2.19	2.04	2.04	1.91
Iron bars, Terre Haute, Ind.	1.60	1.60	1.60	1.65
Shapes, Pittsburgh	1.85	1.70	1.70	1.60
Shapes, Philadelphia	2.05½	1.90	1.90½	1.65
Shapes, Chicago	1.90	1.75	1.75	1.70
Tank plates, Pittsburgh	1.85	1.70	1.70	1.55
Tank plates, Philadelphia	2.03½	1.88½	1.88½	1.49½
Tank plates, Chicago	1.90	1.75	1.75	1.70
Sheets, No. 10, hot rolled, Pitts.	2.00	1.75	1.75	1.55
Sheets, No. 24, hot ann., Pitts.	2.65	2.25	2.25	2.00
Sheets, No. 24, galvan., Pitts.	3.25	2.85	2.85	2.65
Sheets, No. 10, hot rolled, Gary	2.10	1.85	1.85	1.70
Sheets, No. 24, hot anneal., Gary	2.75	2.35	2.35	2.10
Sheets, No. 24, galvan., Gary	3.35	2.95	2.95	2.75
Plain wire, Pittsburgh	2.30	2.20	2.20	2.10
Tin plate, per base box, Pitts.	5.25	5.25	5.25	4.25
Wire nails, Pittsburgh	2.60	2.35	2.35	1.85
Semifinished Material				
Sheet bars, open-hearth, Youngs.	30.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	30.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	29.00	26.00	26.00	26.00
Wire rods, Pittsburgh	38.00	36.00	36.00	35.00

	April 21, 1934	Mar. 1934	Jan. 1934	April 1933
Pig Iron				
Bessemer, del. Pittsburgh	19.76	19.26	19.26	16.26
Basic, Valley	18.00	17.00	17.00	14.00
Basic, eastern, del. eastern Pa.	19.76	18.76	18.76	14.19
No. 2 foundry, del. Pittsburgh	19.26	18.76	18.76	15.76
No. 2 foundry, Chicago	18.50	17.50	17.50	15.50
Southern, No. 2, Birmingham	14.50	13.50	13.50	11.40
No. 2X, Eastern, del. Philadelphia	20.63	19.63	19.63	13.76
Malleable, Valley	18.50	17.50	17.50	14.50
Malleable, Chicago	18.50	17.50	17.50	15.50
Lake Superior charcoal, del. Chi.	23.54	23.54	23.54	23.04
Gray forge, del. Pittsburgh	18.88	18.38	18.38	15.63
Ferromanganese, del. Pittsburgh	90.24	90.24	90.24	73.24
Scrap				
Heavy melting steel, Pittsburgh	$14.25	14.30	13.05	9.90
Heavy melting steel, eastern Pa.	11.50	11.70	11.65	6.90
Heavy melting steel, Chicago	11.75	12.00	10.45	6.55
No. 1 wrought, eastern Pa.	12.25	12.75	12.75	7.35
No. 1 wrought, Chicago	10.90	10.80	9.45	5.50
Rails for rolling, Chicago	12.75	12.75	11.25	8.50
Coke				
Connellsville, furnace, ovens	3.25	3.35	3.60	1.75
Connellsville, foundry, ovens	4.60	4.25	4.25	2.25

Steel, Iron, Raw Material and Metals Prices

Prices conform to American Iron and Steel institute schedules. Asterisks denote price changes this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	2.00c
Gary, base	2.10c
Chicago, del.	2.13c
New York, del.	2.33c
Philadelphia, del.	2.29c
Birmingham, base	2.15c
St. Louis, del.	2.32c
F.o.b. cars, dock, Pacific ports	2.67½c

HOT ROLLED ANN. No. 24

Pittsburgh, base	2.65c
Gary, base	2.75c
Chicago, del.	2.78c
Detroit, del.	2.85c
New York, del.	2.98c
Philadelphia, del.	2.94c
Birmingham, base	2.80c
St. Louis, del.	2.97c
F.o.b. cars, dock, Pacific ports	3.35c

GALVANIZED No. 24

Pittsburgh, base	3.25c
Gary, base	3.35c
Chicago, del.	3.38c
Philadelphia, del.	3.54c
New York, del.	3.58c
Birmingham, base	3.40c
St. Louis, del.	3.57c
San Francisco, f.o.b. cars, dock	3.95c

TIN MILL BLACK No. 28

Pittsburgh, base	2.85c
Gary, base	2.95c
St. Louis, del.	3.17c

COLD ROLLED No. 10

Pittsburgh, base	2.55c
Gary, base	2.65c
Detroit, delivered	2.75c
Philadelphia, del.	2.84c
New York, del.	2.88c

COLD ROLLED No. 20

Pittsburgh, base	3.15c
Gary, base	3.25c
Detroit, delivered	3.35c
Philadelphia, del.	3.44c
New York, del.	3.48c

ENAMELING SHEETS

Pittsburgh, No. 10	2.60c
Pittsburgh, No. 20	3.20c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh. Gary base, 10 cents higher

Tin plate, coke base contract	$5.25
Do., stock	4.90c
Long ternes, No. 24 unassorted	3.65c

Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel; sheets, 35c; plates, 28c; bars, 24c; hot-rolled strip, 24.50c; cold-rolled strip, 32.00c.

	A	B	C	D
Bars	17c	18.5c	21c	26c
Plates	20c	21.5c	24c	29c
Sheets	25c	28c	31c	35c
Hot strip	17c	18.5c	21c	26c
Cold strip	22.5c	24c	27c	35c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 19/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.85c
New York, del.	2.13c
Philadelphia, del.	2.03½c
Boston, del.	2.25c
Buffalo, del.	2.08½c
Chicago, base	1.90c
Cleveland, del.	2.03½c
Birmingham, base	2.00c
Coatesville, base	1.95c
Sparrows Pt., base	1.95c
Pacific Coast, f.o.b. cars, dock	2.40c
St. Louis, del.	2.12c

Structural Shapes

Pittsburgh, base	1.85c
Philadelphia, del.	2.05½c
New York del.	2.10½c
Boston, del.	2.23½c
Bethlehem, base	1.95c
Chicago, base	1.90c
Cleveland, del.	2.03½c
Buffalo, base	1.90c
Birmingham, base	2.00c
Pacific Coast, f.o.b. cars, dock	2.40c

Bars

SOFT STEEL

Pittsburgh, base	1.90c
Chicago base	1.95c
Birmingham, base	2.05c
Buffalo, base	2.00c
Cleveland, base	1.95c
Detroit, del.	2.05c
Pacific Coast ports cars, dock, c.i.f.	2.45c
Philadelphia, del.	2.19c
Boston, del.	2.30c
New York, del.	2.23c
*Pitts., forg. qual.	2.05c-2.55c

RAIL STEEL
To Manufacturing Trade

Pittsburgh	1.80c
Chicago	1.85c
Cleveland	1.85c
Gary, Ind.	1.85c
Buffalo	1.90c

IRON

Terre Haute, Ind. base	1.60c
Philadelphia, base	1.74c
Pittsburgh, refined	2.75c-7.50c

REINFORCING
New billet, cut lengths, carlots

Pittsburgh	1.90c
Chicago, Gary, Buffalo, Cleve., Birm., Young	1.95c
Gulf ports	2.30c
Pacific coast ports	2.45c
Philadelphia, del.	2.79c

Rail Steel

Pittsburgh, base	1.75c
Chicago, Buffalo, Cleveland, Birm., Young	1.80c
Gulf ports	2.15c
Pacific coast ports	2.30c

Wire Products □ □

(Prices apply to straight or mixed carloads; pool cars, or less, 10c up. 10% dis. on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland
(Per 100-lb. keg)

Standard wire nails	$2.60
Cement coated nails	2.60
Galvanized nails, 15 gage and coarser	4.60c
Do., 16 gage and finer	5.10c

(Per pound)

Polished staples	3.30c
Galvanized fence staples	3.55c
*Barbed wire, galv.	3.00c
Annealed fence wire	2.50c
Galvanized fence wire	2.85c
Woven wire fencing (base column, c.l.)	$63.00
*Plain wire, 6-9 gage to mfg. trade	2.30c

Anderson, Ind., Chicago up $1; Duluth up $2; Birmingham up $3.

*Spring wire	3.20c

Chicago and Waukegan $1 higher, Worcester $2 higher.

Cold-Finished Carbon Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.	2.00c
100,000 lbs. and over	1.97½c

Chicago, Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Shafting □ □ □

Turned and ground, Pitts. base

1⅛-inch	3.40c
1 1/16 to 1½-inch	2.90c
1 9/16 to 1⅞-inch	2.75c
1 13/16 to 2 7/8-inch	2.60c
2 1/16 to 7-inch	2.45c

Alloy Steel Bars □

Hot Rolled

Pittsburgh, Buffalo, Chicago, Massillon, Canton	2.55c
*Bethlehem	2.55c

Alloy	Diff.	Alloy	Diff.
S.A.E.		S.A.E.	
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 .15 to .25 Mo	0.50
4600 .20 to .30 Mo. 125-1.75 Ni.	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	base
6100 bars	1.20
6100 spring	0.70
Cr., Ni., Van.	1.50
Carbon van.	0.95
9250 carbon base plus extras	

Strip and Hoops □

Hot strip to 23 1/8-in. Pittsburgh	2.00c
Do., Chicago	2.10c
Do., del. Detroit	2.20c
Do., del. Phila.	2.29c
Do., del. N. Y.	2.33c
Cooperage hoop, Pittsburgh	2.10c
Do., Chicago	2.20c
Cold-rolled strip, Pitts., Cleve.	2.80c
Worcester	3.00c

Rails, Track Material □

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 24-45 lbs.	$26.00
50-60 lbs.	$23.00
70-75 lbs.	$18.00
80-85 lbs.	$25.00
100 lbs.	$26.00
Light rails, billet qual., Pitts., Chi.	$32.00
Do., reroll. qual.	$31.00
Angle bars, mills	2.55c
Spikes, R. R. base	2.40c
Track bolts, base	3.55c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs., up $8; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons or more; diff. for less.

Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots. Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	70 off
Rolled thread, ½ x 6 and smaller	70 off

MACHINE BOLTS
All sizes, cut thread, lag Screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts, without nuts — 70 off
Tire bolts — 60 off
Stove bolts, 70-25-10 off in pkgs.; 83 off in bulk, 5000 or more of a size.
Rolled thread machine bolts, ½ x 6 and smaller, 70 off
Step bolts — 66 off
Elevator bolts — 66 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in., smaller	85 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	75-10 off
Upset, larger than 1-in.	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	3.00c
Struc., c. l., Chicago	3.10c
7/8-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila.	6.25 off

Cut Nails, Piling □

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more, no discount on size extras	$3.05
Do. less than 5 kegs; no discount on size extras	$3.20
Steel piling, Pittsburgh	2.15c
Steel piling, Chi., Buff.	2.25c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

In.	Blk.	Gal.
Steel		
¼ and ⅜	57	38½
½	62	50½
¾	65½	55½
1—3	67½	58½
Iron		
½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD

Steel		
2	63½	54½
2½—3	66½	57½
3½—6	68½	59½
7 and 8	67½	57½
9 and 10	67	57
Iron		
2	37	22½
2½—3½	38	25
4—8	40	28½

LINE PIPE

Steel	
⅛-inch, butt weld	50½
¼—⅜, butt weld	56
½, butt weld	61
¾, butt weld	64½
1—3, butt weld	66½
2-inch, lap weld	62½
2½—3, lap weld	65½
3½—6, lap weld	67½
7—8, lap weld	66½
Iron	

⅛—1½-inch, black and galv. take 4 pts. over; 2½—6-inch 2 pts. over discounts for same sizes, standard pipe lists. 8—12-inch, no extra.

BOILER TUBES
C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¾—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 2000 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 pounds, two points under base only.

SEAMLESS BOILER TUBES

Cold Drawn			
2—2¼	27	3¼—3½	41
2½—2¾	34	4	43
3	38	4½, 5, 6	36

(On 1—1¾-inch sizes mechanical tubing dis. apply.)

Hot Rolled			
2—2¼	33	3¼—3½	47
2½—2¾	40	4	49
3	44	4½, 5, 6	42

Quantity discounts: Carload and more gets preferentials of two 5%; 2000 to 999 pounds, 10 points off base and one 5%, under 2000 pounds, 15 points under base and one 5%.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$36.00-37.00
4-in., Birmingham	39.00-40.00
4-in., Chicago	47.00-48.00
6 to 24-in., Chicago	44.00-45.00
6-in., & over, east. fdy.	40.00
Do., 4-in.	43.00

Class A pipe $3 over Class B. Stnd. fitgs., Birm. base....$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, 5 higher.

Semifinished Steel □

Prices Per Gross Ton

BILLETS AND BLOOMS
4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess.	$29.00
Philadelphia	34.30
Forging, Pitts., Chi.	34.00

SHEET BARS

Pitts., Cleve., Young.	30.00
Chicago	30.00
Canton, O.	30.00

SLABS

Pitts., Cleve., Young.	29.00

WIRE RODS

Pitts., Cleveland	38.00
Chicago	39.00

SKELP

All grades, Pitts. and Chicago	1.70c

Coke □ □ □

Price Per Net Ton

BEEHIVE OVENS

Connellsville fur†	$3.25- 3.85
Connellsville fdry.	4.60
Connell. prem. fdy.	5.35
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

†Lower prices for yearly contracts.

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.71- 9.31
Chi., ov., outside del.	8.50
Chicago, del.	9.25
New England, del.	10.50
St. Louis, del.	9.25
Birmingham, ovens	5.50
Indianapolis, del.	8.75
Cincinnati, del.	9.30
Cleveland, del.	9.25
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.50
Philadelphia, del.	9.00

Coke By-Products □

Per gallon, producers' plants.
Tank lots

	Spot
Pure benzol	$0.19
90 per cent benzol	$0.19
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per lb. f.o.b. New York

Phenol (200 lb. drums)	0.163c
Do. (100 lbs.)	0.173c

Eastern Plants, Per Pound, In Barrels

†Naphthalene flakes and balls	6.00

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.25

†Western prices ½-cent up.

Pig Iron

Delivered prices do not include switching charges except as noted. No. 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25. Gross tons.

	No. 2 Fdry.	Malleable	Basic	Bessemer
Basing Points:				
Bethlehem, Pa.	$19.50	$20.00	$19.00	$20.50
Birdsboro, Pa.	19.50	20.00	19.00	20.50
Swedeland, Pa.	19.50	20.00	19.00	20.50
Sparrows Point, Md.	19.50	.....	19.00	.....
From Swedeland, Pa., del. to Phila.	20.26	20.76	19.76	.....
From Bethlehem, del. to Brooklyn	21.77	22.27	.....	.....
From Bethlehem, del. to Newark, N. J.	20.99	21.39	.....	.....
Basing Point:				
Everett, Mass.	19.50	20.00	19.00	20.50
From Everett, del. to Boston	20.00	20.50	19.50	21.00
Basing Point:				
Buffalo	18.50	19.00	17.50	18.50
From Buffalo, del. to Boston	20.00	20.50	19.50	21.00
Basing Points:				
Neville Island, Pa.	18.50	18.50	18.00	19.00
Sharpsville, Pa.	18.50	18.50	18.00	19.00
Youngstown, O.	18.50	18.50	18.00	19.00
From Neville Island, Pa., del. to Pittsburgh district	(Neville Island base, plus 63c to $1.13 switching charges)			
Basing Points:				
Erie, Pa.	18.50	19.00	18.00	19.50
Cleveland	18.50	18.50	18.00	19.00
Toledo, O.	18.50	18.50	18.00	19.00
Detroit	18.50	18.50	18.00	19.00
From Detroit, del. to Saginaw, Mich.	20.60	20.60	20.10	21.10
From Cleveland, del. to Akron, Canton, O.	19.76	19.76	19.26	20.26
From Toledo, del. to Mansfield, O.	20.26	20.26	19.76	20.76
Basing Point:				
Jackson, O.	20.25	20.25	19.75	.....
Hamilton, O.	18.50	18.50	18.00	19.00
From Hamilton, del. to Cincinnati	19.51	19.51	19.01	20.01
Do., del. to Indianapolis	20.77	20.77	20.27	21.27
Basing Points:				
Duluth	19.00	19.00	.....	19.50
Chicago	18.50	18.50	18.00	19.00
Granite City, Ill.	18.50	19.00	18.00	.....
From Duluth, del. to St. Paul	20.94	20.94	.....	21.44
From Chicago, del. to Milwaukee	19.50	19.50	19.00	20.00
From Chicago, Toledo or Detroit, del. to Muskegon, Mich.	21.40	21.40	20.90	21.90
From Granite City, del. to St. Louis	19.00	19.50	18.50	.....
Basing Point:				
†Birmingham, Ala.	14.50	.....	13.50	19.00
From Birmingham, del. to:				
Boston	19.62	.....	19.50	.....
Newark, N. J.	20.58	.....	.....	.....
Brooklyn, N. Y.	21.39	.....	.....	.....
Baltimore	20.02	.....	19.90	.....
Philadelphia	19.88	.....	19.76	.....
Cleveland	18.62	.....	18.50	.....
Cincinnati	19.13	.....	18.51	.....
Chicago	*18.72	.....	18.60	.....
St. Louis	18.62	.....	18.50	.....

†Southern delivery only. Prices at northern points are adjusted to quotations on northern iron. *Over 0.70 phos.

Basing Point:
Provo, Utah 16.50

LOW PHOS.

Basing Points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$23.50. Basing Point: †Johnson City, Tenn.—$23.00. †Off grade material is $19.

Philadelphia, standard and copper bearing 24.13

GRAY FORGE		CHARCOAL	
Valley furnace	17.25	Lake Superior fur.	20.50
Pitts. dist. fur.	17.75	Do., del. Chicago	23.54

SILVERY

Jackson County, O., base; 6%—$22.25; 7—$23.25; 8—$24.25; 9—$25.25; 10—$26.25; 11—$27.75.

BESSEMER FERROSILICON

Jackson County, O., base; $10%—$27.25; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25.

Iron Ore □ □

LAKE SUPERIOR ORE
Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

EASTERN LOCAL ORES
Cents, unit, del. E. Pa.

Foundry and basic, 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

FOREIGN ORE
Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.00
No. Afr. & low phos.	9.50
Swedish basic, 65%	9.00
Swedish low phos.	9.50
Spanish No. Africa basic, 50 to 60%	9.00
Tungsten, spot, sh. ton unit, duty pd.	$16.00-16.25
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$18.00

Manganese Ore □

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	24.00
So. African, 52%	24.00
So. Afr., 49-51%	22.00
Indian, 58-50%	nominal
Indian, 48-50%	nominal

Refractories □ □

Per 1000 f.o.b. Works

FIRE CLAY BRICK
First Quality

Pa., Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	48.00
Ohio	40.00
Second Quality	
Pa., Ill., Ky., Md., Mo., Ga., Ala.	40.00
Ohio	25.00

MALLEABLE BUNG BRICK

All bases	50.00

SILICA BRICK

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
Birmingham, Ala.	52.00

MAGNESITE

Dead burned grain, Chester, Pa., Baltimore bases, net	40.00
Domes, Chewelah, Wash., base	22.00

BASIC BRICK
Net ton, f.o.b. Baltimore, Plymouth, Meeting, Pa., Chester, Pa.

Magnesite brick	$65.00
Chrome brick	45.00
Chemically bonded magnesite	55.00

Fluorspar, 85-5 □ □

Washed gravel, duty paid, tide, net ton	$19.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$17.00

Ferroalloys □ □

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	85.00
del. Pittsburgh	90.24
Spiegeleisen, 19-20%, dom. fur. spot†	26.00
Ferrosilicon 50%, freight all., cl.	77.50
Do., less carload.	85.00
Do., 75 per cent.	126-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	90.00
2% carbon	95.00
1% carbon	105.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Ferrotungsten, stand., lb. cont.	1.16- 1.25
Ferrovanadium, 35 to 40% lb., cont., on analysis	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt. allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19%, Rockdale, Tenn., basis, 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous Mill Products

F.o.b. mill base, cents per lb. except as specified. Copper, brass products based on 8.25c Conn. copper

Sheets

Yellow brass (high)	14.25
Copper, hot rolled	15.50
Lead, cut, to jobbers	8.00
Zinc, 100-lb. base	9.00

Tubes and Pipes

High yellow brass	16.75
Seamless copper	16.75

Rods

High yellow brass	12.75
Copper, hot rolled	12.75

Anodes

Copper untrimmed	13.25

Wire

Yellow brass (high)	14.75

Old Metals □ □

Deal, buying prices, cents lb.

No. 1 Composition Red Brass

New York	4.87½-5.12½
*Chicago	5.12½-5.37½
Cleveland	5.50- 6.00
*St. Louis	5.25- 5.50

Heavy Copper and Wire

New York	6.50- 6.62½
*Chicago, No. 1	6.37½-6.62½
Cleveland	6.25- 6.75
*St. Louis	6.25- 6.50

Composition Brass Borings

New York	4.62½-4.87½

Light Copper

New York	5.62½-5.87½
*Chicago	5.12½-5.37½
Cleveland	5.50- 6.00
*St. Louis	5.50- 5.75

Light Brass

*Chicago	3.12½-3.37½
Cleveland	3.25- 3.50

Lead

New York	3.12½-3.37½
Cleveland	3.25- 3.50
Chicago	3.00- 3.25
*St. Louis	3.35- 3.50

Zinc

New York	2.25- 2.50
*Cleveland	2.25- 2.75
Cleveland	2.25- 2.75
St. Louis	2.75-3.00

Aluminum

Clips, soft, Cleve.	13.00-14.50
Borings, Cleveland.	7.00- 7.50
Mixed, cast, Cleve.	11.00-11.25
*Mixed, cast, St. L.	11.75-12.00

Secondary Metals □

Brass ingot, 85-5-5-5	8.75
Remelt al. No. 12	15.50-16.00

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	11.50-12.50
Boston, dealers	7.50- 7.75
Buffalo, No. 1	12.50-13.00
Buffalo, No. 2	11.00-11.50
Chicago, No. 1	11.50-12.00
Cleveland, No. 1	11.50-12.00
Cleveland, No. 2	11.00-11.50
Detroit, No. 1	9.75-10.25
Detroit, No. 2	8.75- 9.25
Eastern Pa.	11.50
Eastern Pa., No. 2..	9.50
Federal, Ill.	8.75- 9.25
Granite City, R. R.	8.75- 9.25
Granite City, No. 2	7.75- 8.25
N. Y., deal. R. R.	9.50
N. Y., deal. No. 2	8.00
Pittsburgh, No. 1	14.00-14.50
Valleys, No. 1	14.50-15.00

COMPRESSED SHEETS

Buffalo, dealers	11.00-11.50
Chicago, factory	10.50-11.00
Cleveland	11.00-11.50
Detroit	9.75-10.25
E. Pa., new mat.	10.50-11.00
Pittsburgh	14.00-14.50
St. Louis	8.00- 8.50
Valleys	14.00-14.50

BUNDLED SHEETS

Buffalo	7.50- 8.00
Cincinnati, del.	8.00- 8.50
Cleveland	8.50- 9.00
Pittsburgh	12.50-13.00
St. Louis	6.00- 6.50

SHEET CLIPPINGS LOOSE

Chicago	6.50- 7.00
Cincinnati	7.50- 8.00
Detroit	6.00- 6.50
St. Louis	5.75- 6.25

STEEL RAILS, SHORT

Birmingham	12.00-12.50
Boston, dealers	7.50- 7.75
Buffalo	14.00-14.50
Chicago (3 ft.)	12.50-13.00
Chicago (2 ft.)	13.00-13.50
Cincinnati, del.	13.00-13.50
Detroit	11.50-12.00
Pitts., (open-hearth 3 ft. and less	16.00-16.50
St. Louis, 2 ft. & less	12.50-13.00

STOVE PLATE

Birmingham	7.00- 7.50
Boston, dealers	4.75- 5.00
Buffalo	10.75-11.00
Chicago, net	7.75- 8.25
Cincinnati, dealers..	7.00- 7.50
Detroit, net	7.50- 8.00
Eastern Pa.	8.50- 9.00
N. Y., deal. fdry.	6.00
St. Louis	6.75- 7.25

COUPLERS, SPRINGS

Buffalo	13.75-14.25
Chicago, springs	12.50-13.00
Eastern Pa.	15.50
Pittsburgh	16.00-16.50
St. Louis	9.00- 9.50

ANGLE BARS—STEEL

Chicago	12.50-13.00
St. Louis	9.50-10.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	14.00-14.50
Cleveland, billet, bloom crops	14.00-14.50
Eastern Pa. crops..	14.00-14.50
Pittsburgh, billet, bloom crops	17.00-17.50
Pittsburgh, sheet bar crops	15.50-16.00

FROGS, SWITCHES

Chicago	11.50-12.00
St. Louis, cut	9.50-10.00

SHOVELING STEEL

Chicago	11.50-12.00
Federal, Ill.	7.75- 8.25
Granite City, Ill.	8.75- 9.25

RAILROAD WROUGHT

Birmingham	7.00- 8.00
Boston, dealers	6.00- 6.50
Buffalo, No. 1	9.50-10.00
Buffalo, No. 2	12.50-13.00
Chicago, No. 1, net..	9.50-10.00
Chicago, No. 2	11.50-12.00
Cincinnati, No. 2	9.50-10.00
Eastern Pa.	12.00-12.50
N. Y., No. 1 deal.	8.50- 9.00
St. Louis, No. 1	6.50- 7.00
St. Louis, No. 2	8.75- 9.25

SPECIFICATION PIPE

Boston	4.50- 4.75
Eastern Pa.	9.50
New York, dealers..	5.25- 5.50

BUSHELING

Buffalo, No. 1	11.00-11.50
Chicago, No. 1	10.50-10.75
Cinci., No. 1 deal.	7.50- 8.00
Cincinnati, No. 2	5.00- 5.50
Cleveland, No. 2	9.00- 9.50
Detroit, No. 1 new..	8.75- 9.25
Valleys, new No. 1..	14.00-14.50

MACHINE TURNINGS

Bimingham	4.50- 5.00
Boston, dealers	4.00- 4.25
Buffalo	6.25- 6.50
Chicago	7.00- 7.50
Cincinnati, dealers..	6.00- 6.50
Cleveland	9.00- 9.50
Detroit	6.50- 7.00
Eastern Pa.	7.50
New York, dealers..	3.25- 3.50
Pittsburgh	10.00-10.50
St. Louis	4.50- 5.00
Valleys	12.00-12.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	3.25- 3.50
Buffalo	7.75- 8.25
Cincinnati, dealers..	6.00- 6.50
Cleveland	9.00- 9.50
Detroit	7.50- 8.00
Eastern Pa.	6.50
New York, dealers..	2.00- 2.50
Pittsburgh	9.00

CAST IRON BORINGS

Birmingham, plain..	4.50- 5.00
Boston, chemical..	8.50- 9.00
Boston, dealers	3.25- 3.50
Buffalo	7.50- 8.00
Chicago	7.50- 8.00
Cincinnati, dealers..	6.00- 6.50
Cleveland	9.00- 9.50
Detroit	7.50- 8.00
E. Pa., chemical	12.00-15.00
New York, dealers..	3.00- 3.50
Pittsburgh	8.50- 9.00
St. Louis	4.50- 5.00

PIPE AND FLUES

Cincinnati, dealers..	5.00- 5.50

RAILROAD GRATE BARS

Buffalo	7.00- 7.50
Chicago, net	7.50- 8.00
Cincinnati	6.00- 6.50
Eastern Pa.	9.00
New York, dealers..	5.00- 5.50
St. Louis	6.00- 6.50

FORGE FLASHINGS

Boston, dealers	6.00- 6.50
Buffalo	11.00-11.50
Cleve., over 10 in.	9.25- 9.75
Detroit	8.50- 9.00

FORGE SCRAP

Boston, dealers	5.00- 6.00
Chicago, heavy	12.50-13.00
Eastern Pa.	10.50-11.00

ARCH BARS, TRANSOMS

St. Louis	11.00-11.50

AXLE TURNINGS

Boston, dealers	4.50- 5.00
Buffalo	9.00- 9.50
Chicago, elec. fur..	10.50-11.00
Cleveland	9.50-10.00
Eastern Pa.	11.00
St. Louis	7.50- 8.00

STEEL CAR AXLES

Birmingham	10.00-11.00
Boston, ship. point..	9.00- 9.50
Buffalo	13.00 13.50
Chicago, net	12.00-12.50
Eastern Pa.	14.00
St. Louis	9.50-10.00

SHAFTING

Boston, ship. point..	11.00-11.25
Eastern Pa.	16.25
New York, dealers..	11.50-12.00
St. Louis	13.00-13.50

CAR WHEELS

Birmingham, iron	9.50-10.00
Boston, iron deal.	6.50- 6.75
Buffalo, iron	12.25-12.75
Buffalo, steel	13.75-14.25
Chicago, iron	12.00-12.50
Chicago, rolled steel	12.50-13.00
Cincinnati, iron	10.25-10.50
Eastern Pa., iron	13.50-14.00
Eastern Pa., steel	15.00-15.50
Pittsburgh, iron	13.00-13.50
Pittsburgh, steel	16.00-16.50
St. Louis, iron	9.50-10.00
St. Louis, steel	9.00- 9.50

NO. 1 CAST SCRAP

Birmingham	9.00-10.00
Boston, No. 2	5.50- 6.00
Boston, tex. con.	10.50-11.00
Buffalo, cupola	11.50-12.00
Buffalo, mach.	12.00-12.50
Chicago, agri. net	8.25- 8.75
Chicago, mach. net	9.00-10.00
Chi., railroad net	9.00- 9.50
Cinci., mach. cup	10.75-11.25
Cleveland, cupola	11.50-12.50
Detroit, net	9.50-10.00
Eastern Pa., cupola	12.50-13.00
Pittsburgh, cupola..	12.75-13.25
San Francisco, del..	13.50-14.00
Seattle	7.00- 8.50
St. Louis, No. 1	8.25- 8.75
St. L., No. 1 mach..	10.00-10.50

HEAVY CAST

Boston, del.	6.75- 7.00
Buffalo, break.	9.00- 9.50
Cleveland, break.	8.50- 9.00
Detroit, break.	8.50- 9.00
Detroit, auto net	11.00-11.50
Eastern Pa.	11.50-12.00
N. Y., No. 1, deal.	8.00- 8.50
N. Y., break. deal.	8.00- 8.50
Pittsburgh	11.75-12.25

MALLEABLE

Boston, consum.	12.50-13.00
Buffalo	13.25-13.75
Chicago, R. R.	12.25-12.75
Cincinnati, agri. del.	9.75-10.25
Cinci., R. R. del.	10.50-11.00
Cleveland, rail.	13.00-13.50
Detroit, auto	9.75-10.25
St. Louis, R. R.	9.50-10.00
Eastern Pa., R. R.	11.50-12.50

RAILS FOR ROLLING

5 feet and over

Birmingham	10.50-11.50
Boston, dealers	7.50- 7.75
Buffalo	12.00-12.50
Chicago	12.50-13.00
Eastern Pa.	13.00
New York, dealer.	8.00- 8.50
St. Louis	10.00-10.50

LOCOMOTIVE TIRES

Chicago (cut)	12.50-13.00
St. Louis, No. 1	9.75-10.25

LOW PHOS. PUNCHINGS

Buffalo	13.75-14.25
Chicago	12.50-13.00
Eastern Pa.	14.50-15.00
Pittsburgh	15.25-15.75

Nonferrous Metal Prices of the Week

Spot unless otherwise specified. Cents per pound

	Copper: Electro., del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead: N. Y.	Lead: East St. L.	Zinc: St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Ingot Nickel
April 14	8.50	8.62½	8.25	55.40	55.45	4.25	4.10	4.40	*22.90	7.95	36.00
April 16	8.50	8.62½	8.25	55.00	55.00	4.25	4.10	4.40	*22.90	7.95	36.00
April 17	8.50	8.62½	8.25	55.35	55.35	4.25	4.10	4.40	*22.90	7.95	36.00
April 18	8.50	8.62½	8.25	55.35	55.35	4.25	4.10	4.35	*22.90	7.95	36.00
April 19	8.50	8.62½	8.25	55.20	55.17½	4.25	4.10	4.35	*22.90	7.95	36.00
April 20	8.50	8.62½	8.25	56.10	56.02½	4.25	4.10	4.35	*22.90	7.95	36.00

*Nominal range 10.00c to 22.90c.

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*	2.75c
Boston††	2.90c
Buffalo	2.95c
Chattanooga	3.26c
Chicago	2.90c
Cincinnati	3.10c
Cleveland	2.90c
Detroit	2.98½c
Houston	3.00c
Los Angeles	3.40c
New Orleans	3.00c
New York‡(d)	3.17c
Pittsburgh	2.85c
Philadelphia*	2.75c
San Francisco	3.55c
Seattle	3.40c
St. Louis	3.14c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS	
Portland	3.40c
Baltimore*	2.60c
Chattanooga	3.26c
Chicago	2.75c
Cincinnati	3.10c
Detroit	2.98½c
New York‡(d)	3.10c
Philadelphia*	2.75c
St. Louis	3.14c
Tulsa	3.25c

REINFORC. BARS	
Boston	2.75c-3.25c
Buffalo	1.95c
Chattanooga	3.26c
Chicago	1.95c-2.10c
Cleveland (c)	1.97½c
Cincinnati	3.10c
Houston	3.25c
Los Ang., cl.	2.15c
New Orleans	3.00c
New York	3.17c
Philadelphia	2.62½c
Pitts., plain	3.00c
Pitts., twisted squares	3.12½c
San Francisco	2.45c
Seattle	2.45c
St. Louis	3.29c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES	
Baltimore*	2.75c
Boston††	3.07c
Buffalo	3.20c
Chattanooga	3.46c
Chicago	3.10c
Cincinnati	3.30c
Cleveland	3.21c
Detroit	3.30c
Houston	3.00c
Los Angeles	3.40c
New Orleans	3.50c
New York(d)	3.27c
Philadelphia*	2.75c
Pittsburgh	3.05c
Portland	3.40c
San Francisco	3.50c
Seattle	3.40c
St. Louis	3.34c
St. Paul	3.25c
Tulsa	3.50c

PLATES	
Baltimore*	2.75c
Boston††	3.08c
Buffalo	3.20c
Chattanooga	3.46c
Chicago	3.10c
Cincinnati	3.30c
Cleveland, ¼-in. and thicker	3.21c
Cleve., ⅜-in.	3.20c
Detroit	3.30c
Detroit, ⅜-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New Orleans	3.50c
New York(d)	3.30c
Philadelphia*	2.75c
Phila. floor	4.35c
Pittsburgh	3.05c
Portland	3.40c
San Francisco	3.50c
Seattle	3.40c
St. Louis	3.34c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE	
Baltimore*	2.95c
Boston††	3.15c
Buffalo	3.10c
Chattanooga	3.26c
Chicago	2.95c
Cincinnati	3.10c
Cleveland	3.01c
Det., 8-10 ga.	3.03½c
Houston	3.35c
Los Angeles	3.65c
New Orleans	3.50c
New York	3.17c
Portland	3.65c
Philadelphia*	2.95c
Pittsburgh	2.85c
San Francisco	3.75c
Seattle	3.65c
St. Louis	3.19c-3.36c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK	
Baltimore*†	3.50c
Boston (g)	3.75c
Buffalo	3.25c
Chattanooga	4.01c
Chicago	3.70c
Cincinnati	3.85c
Cleveland	3.76c
Detroit	3.78½c
Los Angeles	4.15c
New York	3.65c
Philadelphia*†	3.40c
Pittsburgh**	3.40c
Portland	4.25c
San Francisco	4.25c
Seattle	4.25c
St. Louis	3.94c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS	
Baltimore*††	3.75c
Buffalo	4.00c
Boston (g)	4.35c
Chattanooga	4.61c
Chicago	4.20c-4.30c
Cincinnati	4.45c
Cleveland	4.36c
Detroit	4.45c
Houston	4.40c
Los Angeles	4.75c
New Orleans	4.35c
New York	4.25c
Pitts.**	3.90c-4.20c
Portland	4.85c
San Francisco	4.85c
Seattle	4.85c
St. Louis	4.54c
St. Paul	4.19c
Tulsa	5.10c
Philadelphia*†	4.00c

BANDS	
Baltimore	3.05c
Boston††	3.15c
Buffalo	3.30c
Chattanooga	3.51c
Chicago	3.20c
Cincinnati	3.35c
Cleveland	3.26c
Detroit, ⅛-in. and lighter	3.28½c
Houston	3.25c
Los Angeles	3.90c
New Orleans	3.20c
New York(d)	3.42c
Philadelphia	3.05c
Pittsburgh	3.10c
Portland	3.90c
San Francisco	4.05c
Seattle	3.90c
St. Paul	3.20c
Tulsa	3.45c
St. Louis	3.44c

HOOPS	
Baltimore	2.80c
Boston	4.15c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.35c
Det., No. 14 and lighter	3.28½c
New York	3.42c
Philadelphia	3.30c
Pittsburgh	3.60c
Seattle	5.40c
St. Paul	3.75c

COLD FIN. STEEL	
Baltimore (c)	3.71c
Boston	4.00c-4.50c
Buffalo (h)	3.55c
Chattanooga*	4.06c
Chicago (h)	3.50c
Cincinnati	3.70c
Cleveland (h)	3.50c
Detroit	3.63½c
Los Ang.(f)(d)	5.95c
New Orleans	4.25c
New York	3.92c-4.42c
Philadelphia	3.73c
Pittsburgh(h)	3.45c
Portland (f)	4.75c
San Fran.(f)(d)	5.95c
Seattle (f)(d)	4.75c
St. Paul	3.20c
St. Louis	3.74c
Tulsa	4.65c

COLD ROLL. STRIP	
Boston, 0.100-in., 500 lb. lots	5.20c
Buffalo	5.25c
Chicago (b)	5.65c
Cincinnati	5.80c
Cleveland (b)	5.55c
Detroit	5.40c
Philadelphia	4.00c
New York	4.55c
St. Louis	5.74c

(b) Net base, straightening, cutting, boxing, 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) 50 bundles or over.
(h) Outside delivery, 10c less.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs. extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York, Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less, up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, April 19

Export Prices f. o. b. Ship at Port of Dispatch—By Cable (or Radio)

PIG IRON	British gross tons U. K. ports £ s d		Continental Channel or North Sea ports metric tons Gold parity, $4.8665 £ s d	
Foundry, 2.50-3.00 Silicon.	$15.45	3 0 0	$8.03	1 13 0
Basic bessemer	13.91	2 14 0*	7.30	1 10 0
Hematite, Phos. .03-.05	16.22	3 3 0	....	.....
SEMIFINISHED STEEL				
Billets	$28.33	5 10 0	$11.44	2 7 0
Wire rods, No. 5 gage	40.17	7 16 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$39.91	7 15 0	$26.77	5 10 0
Merchant bars	1.73c	7 10 0	.69c to .72c	3 2 6 to 3 5 0
Structural shapes	1.70c	7 7 6	.63c to .66c	2 17 6 to 3 0 0
Plates, †¼ in. or 5 mm.	1.84c	8 0 0*	.91c	4 2 6
Sheets, black, 24 gage or 0.5 mm.	2.13c	9 5 0	1.24c to 1.27c	5 12 6 to 5 15 0
Sheets, gal., 24 gage, corr.	2.59c	11 5 0	1.51c	6 17 6
Bands and strips	1.90c	8 5 0	.88c	4 0 0
Plain wire, base	2.24c	9 15 0	1.18c	5 7 6
Galvanized wire, base	2.65c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.76c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 4.25	0 16 6	.....	.....

British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d 4($3.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$17.38	3 7 6(a)	$12.60	190	$13.84	295	$24.91	63
Basic bessemer pig iron	16.74	3 5 0(a)*	12.27	185	13.37	285	27.48 (b)	69.50
Furnace coke	4.51	0 17 6	7.96	120	5.16	110	7.61	19.25
Billets	28.33	5 10 0	28.51	430	20.64	440	38.16	96.50
Standard rails	1.90c	8 5 0	2.10c	700	2.31c	1,100	2.36c	132
Merchant bars	1.98c	8 12 0	1.68c	560	1.16c	550	1.97c	110
Structural shapes	2.01c	8 15 0	1.65c	550	1.16c	550	1.92c	107.50
Plates, †¼-in. or 5 mm.	2.04c	8 17 6	2.10c	700	1.47c	700	2.27c	127
Sheets, black	2.36c	10 5 0‡	2.55c	850‡	1.63c	775‡	2.58c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.93c	12 15 0	4.50c	1,500	3.15c	1,500	6.62c	370
Plain wire	2.24c	9 15 0	3.39c	1,130	2.31c	1,100	3.10c	173
Bands and strips	2.42c	10 10 0	1.95c	650	1.47c	700	2.27c	127

*Basic. †British ship-plates. Continental, bridge plates. ‡24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. (a) del. Middlesbrough. (b) hematite

Bars

Bar Prices, Page 50

Pittsburgh—Alloy steel bars at 2.55c, Pittsburgh, now reflect the recent $2 a ton advance. It is understood that no advance was made at the Bethlehem, Pa., base which formerly had been $2 over other basing points, so that now all alloy bar base prices are on a parity. Revised price on carbon steel bars now makes the market 1.90c, Pittsburgh. Although contracting has been heavy in both carbon and alloy bars for shipment over second quarter, specifications the past week show the market has declined somewhat.

Cleveland—Both large and small consumers have covered requirements for second quarter, and producers now are urging specifications as early as possible to insure delivery of all tonnage by June 30. To accomplish this, according to code requirements, makers believe May will be a heavy production month. Coverage has been so complete that the new prices are not expected to be tested until late in the quarter. Shipments to automotive interests, railroads and other users are increasing.

Chicago—Specifications from most steel bar consumers are well maintained, and shipments, although showing little further improvement, are retaining previous gains. Contracts received for delivery this quarter indicate a heavy rate of shipment and production is expected to continue several months at near present levels. Higher prices now are in effect on soft steel and rail steel bars, new quotations being 1.95c and 1.85c, respectively. Alloy steel bars have been advanced $2 a ton to 2.55c, Chicago.

Boston—Steel bar sales have slowed, following recent covering activity and a moderate gain in shipping orders. On new business 2.30c, Boston, is applicable.

New York—Commercial steel bar tonnage is increasing, with contract consumers specifying more freely than possibly at anytime this year. This is greeted with satisfaction by sellers, particularly in view of the fact that their rolling schedules are filling up for this quarter. Certain mills expect their schedules will be completely filled within another two or three weeks. The market here is 2.13c, delivered.

Philadelphia—Rolling schedules of eastern steel barmakers are filling rapidly. Railroad tonnage leads, but miscellaneous demand is expanding. The current market is 2.19c, Philadelphia. Common iron bars are being quoted by some sellers at an advance of $2, or 1.70c, Pittsburgh, and 1.99c, delivered, Philadelphia.

Washington — Navy department has distributed 364 tons of steel bars, bids March 20, as follows: Carnegie Steel Co. 140 tons, Sharon Steel Hoop Co. 70 tons, Bethlehem Steel Co. 70 tons, Joseph P. Cattie, Philadelphia, 84 tons.

Plates

Plate Prices, Page 50

Pittsburgh—Plate mills here actively solicited 4943 tons of tunnel shaft lining for the Ft. Peck, Mont., dam last week. Silas Mason Co., New York, and Walsh Construction Co., Davenport, Iowa, are jointly low for the general contract. Although preliminary work has already been commenced, Marietta Mfg. Co., Pt. Pleasant, W. Va., formally entered contract for two self-propelled suction dredges for Kansas City engineers, requiring 1500 tons of plates. Tank fabricators report practically no important business and most projects require 25 to 50 tons of plates or less. Bids were rejected recently by Vicksburg, Miss., engineers on two steel oil barges requiring 300 tons and will be readvertised. The plate market is now 1.85c, Pittsburgh, on all business not under contract previously, although most buyers are protected at 1.70c, Pittsburgh.

Cleveland—Production has been increased moderately, and the market appears more active. The Wheeling & Lake Erie has purchased 1000 tons of plates and shapes for miscellaneous car repair work. Boilermakers are experiencing a better demand. A Cleveland contractor is low for the Columbus sanitary project requiring 600 tons of tunnel liner plates.

Chicago—Plate demand is slightly more active and an increase in inquiries points to further improvement. Railroads, tank fabricators and equipment builders are taking larger lots. A fair amount of plate business for oil company construction is in prospect while inquiries for gas holders involve more than 13,000 tons. Plates now are 1.90c, Chicago.

New York—While contracting for steel plates is practically over, specifications are fairly active. Tank work is expanding and fairly good buying is being done for ship repairs. Standard Oil may issue an inquiry soon for a tanker. The navy is expected to issue specifications next month for opening in July on one heavy and three light cruisers costing over $27,000,000.

Philadelphia—While still far from active, plate mill operations are better and producers look for further betterment. Current demand shows improvement in miscellaneous requirements, small tank and boiler work in particular.

Norfolk & Western has placed 440 tons of plates with two leading mills.

Contracts Placed

10,500 tons, pipeline for Stacy park reservoir, St. Louis, to McClintic-Marshall Corp., Bethlehem, Pa.

1530 tons, 65 pontoons, each 48 feet long, United States engineer, Memphis, Tenn., to St. Louis Car Co., St. Louis, at $1769 per pontoon; bids April 5.

1500 tons, two self-propelled 34-inch suction dredges for army engineers, Kansas City district, to Marietta Mfg. Co., Pt. Pleasant, W. Va., on low bid of $1,016,500.

1400 tons, canal lining, Casper, Wyo.; to unnamed interest.

450 tons, siphon for Owyhee dam, Oregon, to Chicago Bridge & Iron Works, Chicago.

440 tons, steel hull and deckhouse dredge OMEGA, United States engineer, Memphis, Tenn., to McClintic-Marshall Corp., Bethlehem, Pa., $51,000; hull 172 x 44 x 8 feet; bids April 10.

215 tons, oil tanks, Gulf Refining Co., Philadelphia, to Chicago Bridge & Iron Works, Chicago.

175 tons, 74 welded tanks, St. Louis, to Standard Steel Works, Philadelphia.

135 tons, 300,000-gallon tank, Mount Morris, N. Y., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

125 tons, two oil tanks, W. H. Daugherty & Son, Petrolia, Pa., to Warren City Tank & Boiler Co., Warren, Pa.

100 tons, tanks, Poth Brewery, Philadelphia, to Quaker City Iron Works, Philadelphia.

Contracts Pending

4943 tons, tunnel shaft lining, Ft. Peck, Mont. dam; Silas Mason Co., 500 Fifth avenue, New York, and Walsh Construction Co., Davenport, Iowa, jointly low at $7,311,940 for general contract.

4200 tons, gas holder, Cincinnati, O.

4000 tons, gas holder, New Haven, Conn.

2500 tons, gas holder, Waterbury, Conn.

1500 tons, gas holder, Meriden, Conn.

1250 tons, 84-inch pipe for Santa Marie Reservoir Co., Monte Vista, Colo.; bids opened.

600 tons, tunnel liner plates for Columbus, O., sanitary project; Joseph Winterbottom Co., Cleveland, low for general contract.

600 tons, gas holder, Terre Haute, Ind.

300 tons, two steel oil barges 120 x 30 x 7, feet, United States engineers, Vicksburg, Miss.; bids of April 12 rejected and inquiry to be readvertised.

150 tons, standpipe, state hospital, Worcester, Mass.

140 tons, sheets, 8 to 24-inch pipe line, Utah State Agricultural College, Logan, Utah; bids opened.

100 tons, two gasoline locomotives, Mt. View, Calif., for navy department; bids opened.

120 tons, tanks, distillery, Burlington, N. J.; bids asked.

Unstated tonnage, 20 steel pontoons for

Mobile, Ala., engineers, each 17 x 6½ x 2½ feet; bids April 26, delivery to Pascagoula, Miss.

Unstated tonnage, 60 steel tanks, each 10 feet long, 3 feet o. d. wide, United States engineer, Washington; bids April 24.

Sheets

Sheet Prices, Page 50

Pittsburgh — An advance of $6 to $8 a ton in electrical grades of sheets becomes effective early this week the $6 a ton advance being made on the lower grades and $8 up being announced for the higher grades of this type of sheets. Advanced prices are now quoted on hot and cold-rolled sheets, incorporating recently reported increases of $3 to 8 a ton, and although these levels have not been tested, last week's specifications against second quarter contracts were increasingly heavy.

Cleveland — With higher sheet prices now in effect activity in the market has subsided. As practically all consumers have covered their second quarter requirements no business is being transacted at present at the new prices. Some producers have clauses in their contracts requiring specifications by the fifteenth day of the month preceding the month in which shipment is to be made, and enforced this for May, refusing to take specifications after April 15. Automotive interests are beginning to issue specifications for June.

Chicago—Order books of sheet producers are heavy and indicate a definite increase in production over the balance of this quarter as compared with the past three months. Shipments recently have tended downward slightly except among automotive interests where consumption is well maintained.

Boston—Sheet specifications have dropped with most consumers covered at former prices. Some buyers show little inclination to order out against these contracts, a few small tank builders and jobbers being exceptions.

New York—While actual contracting has fallen off, as a result of the application now of the higher prices, sheet sellers are active in their efforts to get specifications as rapidly as possible. Sellers generally fear shipping complications in June.

Washington — Some 500 tons of stainless steel strip, plates, sheets, angles and bars have been distributed by the navy department under schedule 2007, opened April 3. The distribution is as follows: American Rolling Mill Co., 395,000 pounds; Allegheny Steel Co., 116,000 pounds; Ludlum Steel Co., 375,000 pounds; Crucible Steel Co. of America, 52,000 pounds; American Sheet & Tin Plate Co., 20,000 pounds; Jessop Steel Co., 8000 pounds; Rustless Iron Co. of America, 30,000 pounds; Republic Steel Corp., 10,000 pounds. Distribution of one of the largest awards of the material ever made was effected by drawing capsules from an empty tobacco box.

Superior Steel Corp booked 957 tons of black and galvanized, flat and corrugated steel sheets for the navy department, on schedule 1726, opened Feb. 23.

Philadelphia—With rolling schedules well filled, several sheet mills are advising their district representatives to refer all inquiries to them before indicating acceptance. Meanwhile, contract customers are being urged to get specifications in as early as possible.

Buffalo — Buffalo district sheet mills continue at 80 to 90 per cent and are so scheduled for the next 30 days.

Cincinnati—Heavy bookings resulted from the rush to cover before prices were advanced. Demand was broad, with substantial tonnages for automotive, stove, radio and refrigerator manufacturers. Sheet production in this district is about 65 per cent.

St. Louis—Producers and distributors of steel sheets report contracts booked during the past three weeks far above expectations, and approximating what might be looked for in normal years. Specifications are satisfactory, and the leading producer has stepped up operations.

Railroads

Track Material Prices, Page 51

While standard rails continue to hold at $36.37½, mill, shipments must be made by the end of this quarter and not by Aug. 31 was permissible prior to April 15.

Award of steel rails continues the feature of the railroad market, with placing of track accessories keeping pace. New York, New Haven & Hartford has distributed 25,000 tons of rails, Norfolk & Western 10,000 tons and Maine Central 4200 tons, a total for the week of 39,200 tons. The Nickel Plate has released 3700 tons of rails on its 1932 contract.

Chesapeake & Ohio and Nickel Plate have distributed about 12,000 tons of accessories, including 1,044,000 tie plates, 2,089,000 screw spikes, 378,000 rail anchors and a tonnage of spikes, angle bars and other fastenings for the Chesapeake & Ohio; 185,000 tie plates and a tonnage of spikes and other fastenings for the Nickel Plate.

Accessories placed by the Baltimore & Ohio, accompanying its 35,000-ton rail order reported last week, totaled about 12,000 tons. About 1,000,000 tie plates, 7000 to 8000 tons, were divided between Jones & Laughlin Steel Corp., Republic Steel Corp., Wheeling Steel Corp., Weirton Steel Co. and Youngstown Sheet & Tube Co. The spike order totaled about 35,000 kegs, divided between Weirton Steel Co., Jones & Laughlin Steel Corp., Inland Steel Co., Republic Steel Corp. and Youngstown Sheet & Tube Co.

Norfolk & Western has placed about 4500 kegs of spikes and a small tonnage of tie plates and other fastenings. New York Central has placed 1000 tons of wheels with Pittsburgh and Chicago mills.

Great Northern is expected in the market soon for a fairly large tonnage of steel for its repair program, covering more than 6500 freight and passenger cars and locomotives. Illinois Central and Wabash are working on similar repair programs. Wheeling & Lake Erie has bought 1000 tons of plates and shapes for car repairs.

It develops that American locomotive builders were about 30 per cent too high on 50 locomotives for South Africa, awarded several weeks ago to the North British Locomotive Works at Glasgow, Scotland.

Rail Orders Placed

Canadian Pacific, 4000 tons, to Dominion Steel & Coal Corp.

Maine Central, 4200 tons rails and fastenings to Bethlehem Steel Co., Bethlehem, Pa.

New York, New Haven & Hartford, 25,000 tons; 20,000 tons to Bethlehem Steel Co., Bethlehem, Pa., and 5000 tons to Carnegie Steel Co.; also 10,000 tons of track accessories to several mills.

Norfolk & Western, 10,000 tons of 130-pound steel rails; 7500 tons to Carnegie Steel Co., and 2500 tons to Bethlehem Steel Co.

Car Orders Placed

Carnegie Steel Co., repairs 31 hoppers, to Canton Car Co., Cleveland.

Donner, Hanna Coke Co., repairs 100 hoppers, to Pressed Steel Car Co., Pittsburgh.

Gulf, Mobile & Northern, 150 box, 50 gondolas, to American Car & Foundry Co., New York.

Locomotives Pending

United States engineers, Washington, one unit, 18-ton gasoline-mechanical drive; bids April 24.

Wire

Wire Prices, Page 51

Pittsburgh—Effective April 20, the advanced market on wire products, which was purely nominal through the week, was reduced by counter filing on plain manufacturing wire, barbed wire, bale ties and spring wire, and as recorded in STEEL this week on Page 51, column one, revised asking prices on these items are now quoted. Few wire products' buyers are concerned over prices because of heavy stock. Some improvement is noted, however, in direct shipments of merchant wire products.

Cleveland — Wire manufacturers have good order books for the remainder of second quarter, and shipments are being made at a higher rate than last month, reflecting chiefly demand for automotive materials. Wire production will be heavy during the quarter, but demand for nails is not brisk.

Boston—Wire mills have increased operations with a steady gain in specifications. Rope demand holds up well with a fair amount of heavy cable required for the Cape Cod canal railroad lift bridge.

Philadelphia—Delay in putting advances into effect and milder weather are making for better contracting in wire.

Strip Steel

Strip Prices, Page 51

Pittsburgh—Inquiry for 300 tons of strip steel is active for Ft. Peck, Mont., dam tunnel intakes. Silas Mason Co., New York, and Walsh Construction Co., Davenport, Iowa, are jointly low at $7,311,940 for the general contract and purchase of the 600,000 pounds of steel strip required is expected momentarily. With the market now uniformly 2.00c base, Pittsburgh, for hot-rolled strip steel and 2.80c, Pittsburgh or Cleveland, for cold-rolled strip, some mills are about ready to declare themselves out of the market for second quarter. Cooperage hoop now is quoted 2.10c, base, Pittsburgh.

New York—While consumers are under contract, there is still a fair amount of buying of strip, which is now holding at 2.33c, New York, for hot-rolled, and 3.13c for cold-rolled.

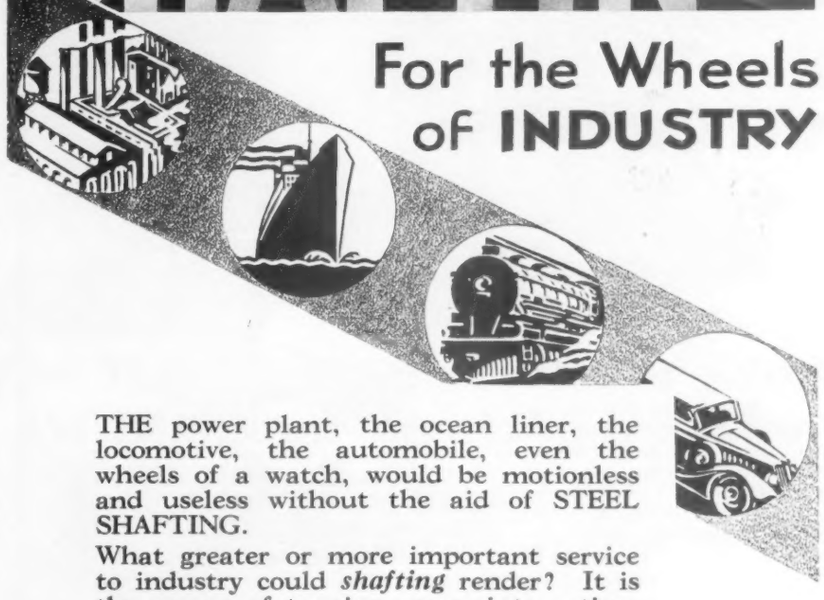
Cleveland—Strip production and shipments are increasing, the chief concern of makers now being to get out material for which they are obligated for second quarter. Consumers in the automotive industry, apparently anxious to obtain all the tonnages due them, are beginning to issue specifications for June. No test of the higher prices, is expected until May or June.

Chicago—Strip orders booked over the past few weeks are heavy and point to well sustained operations. Shipments are expected to show a fairly sustained increase compared with first quarter deliveries, although some of this material is expected to accommodate consumers' needs into third quarter. Automotive consumption is steady with operations of most miscellaneous users maintained.

Philadelphia — Strip consumers here are well under cover at the old prices, with few new orders, and sellers generally well booked for the remainder of the quarter. Current prices are 2.29c, Philadelphia, on hot-rolled and 3.09c on cold-rolled.

SHAFTING

For the Wheels of INDUSTRY



THE power plant, the ocean liner, the locomotive, the automobile, even the wheels of a watch, would be motionless and useless without the aid of STEEL SHAFTING.

What greater or more important service to industry could *shafting* render? It is the means of turning power into action.

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Its bright smooth finish, freedom from surface blemish, and adherence to standard tolerance or special accuracy as needed, are factors you will appreciate in using B&L Shafting.

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BLISS & LAUGHLIN, INC.

HARVEY, ILL. *Sales Offices in all Principal Cities* BUFFALO, N.Y.

Shapes

Structural Shape Prices, Page 50

Pittsburgh—Structural shape orders were considerably more numerous last week, and although substantial inquiry was lacking, there were 75 to 80 small inquiries for new building and repairs which agggregated about 5000 tons. Bids went in on a 378-ton bridge between Clarion and Armstrong counties, Pennsylvania, April 20. Plain structural shape now are quoted uniformly at 1.85c, base, Pittsburgh, and steel sheet piling 2.15c, base, Pittsburgh.

Cleveland—Railroad bridge repair work features inquiry here, but the projects call for only small lots, and the general market is quiet. Chesapeake & Ohio awarded 126 tons for a bridge at Brighton, O.

Chicago—While structural steel awards continue relatively light, increasing activity is noted in private construction. The latter generally is confined to small individual projects but the number of such jobs has increased more rapidly during the past several weeks. Awards of about 3000 tons are limited to small individual lots.

Boston—Coleman Bros., Boston, are low on the Wellington bridge, Mystic river, Medford-Somerville, Mass., taking close to 900 tons of shapes. Fabricators are bidding on considerable volume in New England.

New York—American Bridge Co. is low on close to 5800 tons of structural material for the Boulder canyon, Boulder, Nev., power house. A slight increase is noted in smaller tonnages placed in the New York district.

March bookings of fabricated structural steel, according to preliminary reports to the American Institute of Steel Construction, from 66 per cent of the industry, were the largest in volume of any month this year. They were 18 per cent larger than the average monthly bookings during the last quarter of last year, and 5 per cent larger than the bookings in March, 1933. Shipments, however, were smaller than those for the similar periods. Consequently the tonnage ahead for fabrication is today approximately 13 per cent larger than it was at this time last year.

Philadelphia—Bridge work featured structural buying last week, with the placing of 1700 tons for a Pennsylvania state project and 850 tons for a bridge for the Pennsylvania railroad, near Washington. Shapes now are 1.95c, Bethlehem, or 2.05½c, Philadelphia.

Birmingham, Ala. — Numerous small contracts are noted, and fabricators' operating schedules are being maintained above 50 per cent.

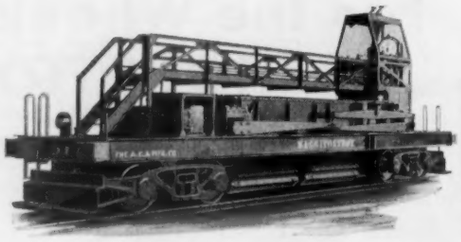
Contracts Placed

1700 tons, Pennsylvania state bridge, route 750, Forest county, through P. T. Cox Contracting Co., New York.

Shape Awards Compared

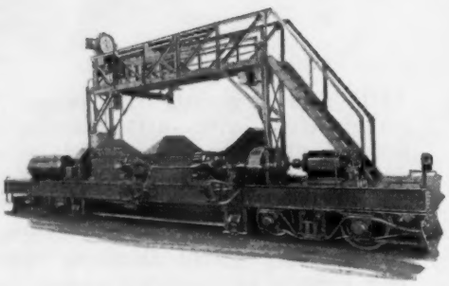
	Tons
Week ended April 21	14,600
Week ended April 14	16,827
Week ended April 7	6,021
This week in 1933	14,483
Weekly average for 1933	15,413
Weekly average, 1934	16,491
Weekly average, March	18,349
Total to date 1933	173,154
Total to date 1934	280,342

ATLAS SCALE CARS



20 Ton — Double Compartment Scale Car. Journals provided with self aligning anti-friction bearings. Equipped with Atlas Indicator and Recorder.

20 Ton Two Compartment Scale Car with Orr Bin Gate Operating Mechanism. Anti-friction bearings. Equipped with Atlas Indicating and Recording Mechanism.



Other Atlas Products

Gas-Electric and Diesel-Electric Locomotives—Car Pushers—Storage Battery Locomotives—Electrically Operated Industrial Cars—Scale Cars and Weighing Cars of all kinds — Ore Transfer Cars and Blast Furnace Charging Cars.

Coke Oven Equipment

Pushers and Levelers—Coal Charging Cars—Door Handling Machines — Coke Quenching Cars.

Also Atlas Patented Indicating and Recording Mechanism for Weighing Scales.

THE ATLAS CAR & MFG. CO.

Engineers *Manufacturers*

CLEVELAND, OHIO

to Phoenix Bridge Co., Phoenixville, Pa.

1100 tons, library, Temple university, Philadelphia, reported placed through Ralph A. Herzog, Philadelphia, with Bethlehem Fabricators Inc., Bethlehem, Pa.

950 tons, state bridge, Peoria, Ill., to American Bridge Co., Pittsburgh.

850 tons, Anacosta river bridge, Pennsylvania railroad, near Washington to McClintic-Marshall Corp., Bethlehem, Pa.

670 tons, state highway bridge, Madison, Wis., to McClintic-Marshall Corp., Bethlehem, Pa.

650 tons, building for Continental Can Co., Austin, Ind., to American Bridge Co., Pittsburgh.

630 tons, John Marshall high school, Rochester, N. Y., to F. L. Heughes & Co., Rochester.

575 tons, bridge, Norfolk, Va., to Wisconsin Bridge & Iron Co., Milwaukee.

500 tons, piling, Midland, Mich., dock for Dow Chemical Co., to Inland Steel Co., Chicago.

475 tons, piling, Boling field, Washington, through P. & A. J. Ellis, Washington, to Kalman Steel Corp., Bethlehem, Pa.

450 tons, bridge, Memphis, Tenn., to Virginia Bridge & Iron Co., Roanoke, Va.

450 tons, bridge, N.R.H.-284-C, Jefferson county, Arkansas, to Virginia Bridge & Iron Co., Roanoke, Va.; J. F. Mullens, Pine Bluff, Ark, general contractor.

390 tons, highway bridge, Poland Pa., to Jones & Laughlin Steel Corp., Pittsburgh.

325 tons, federal warehouse, Washington, to McClintic-Marshall Corp., Bethlehem, Pa.; Walter Kidde Constructors Inc., New York, general contractors.

275 tons, grandstand, Rochester, N. Y., to Leach Steel Co., Rochester, N. Y.

270 tons, state bridge, Patuxent river, Maryland, to American Bridge Co., Pittsburgh; Maryland Engineering & Construction Co., Baltimore, general contractor.

250 tons, bridge, Hot Sulphur Springs, Colo., to Midwest Steel & Iron Works Co., Denver.

244 tons, state crossing in Grand county, Colorado, to unnamed interest.

225 tons, state hospital building, Trenton, N. J., to McClintic-Marshall Corp., Bethlehem, Pa.

220 tons, 350-foot truss and beam spans, Cherokee county, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines.

210 tons, building, Agar Mfg. Co., Whippany, N. J., to Lehigh Structural Steel Co., Allentown, Pa.

200 tons, apartment building, Fort Benning, Ga., to Dietrich Bros., Baltimore.

200 tons, miscellaneous structural work for Gulf Refining Co., Pittsburgh, to Pittsburgh Bridge & Iron Co., Rochester, Pa.

200 tons, grain elevator, Amarillo, Tex., for Farmers National Warehouse Corp. to Gage Structural Steel Co., Chicago.

200 tons, building, Cedar Rapids, Iowa, for Quaker Oats Co., to Iowa Steel & Iron Works, Cedar Rapids.

195 tons, building, state hospital, Skillman, N. J., to Bethlehem Fabricators Inc., Bethlehem, Pa.; Peluchi Co., general contractor.

195 tons, state bridge, 3521, Putnam county, New York, to McClintic-Marshall Steel Corp., Bethlehem, Pa.; Clarence L. Smith Inc., New York, general contractor.

190 tons, bridge, Holly Springs-Grand Junction road, Benton county, Mississippi, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa; project also takes 120 tons of concrete bars.

170 tons, state highway bridge, Culpepper, Va., to Virginia Bridge & Iron Co., Roanoke, Va.

165 tons, state bridge, 34-4, Queens, New York, to American Bridge Co., Pittsburgh; through Carlton Co., Inc.

165 tons, two beam spans, Ida county, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines.

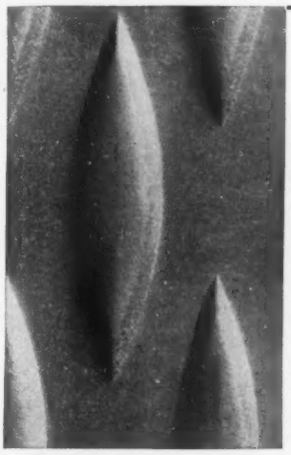
160 tons, Federal avenue overpass and approaches, highway 1, Adams county, Colorado, to Midwest Steel & Iron Works Co., Denver; M. E. Carlson, Denver, general contractor.

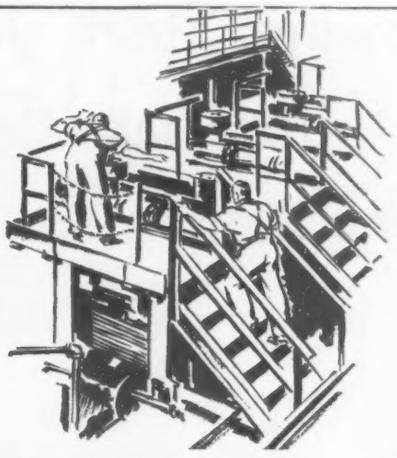
145 tons, three beam spans, Jefferson county, Iowa, to Clinton Bridge Works, Clinton, Iowa.

140 tons, shapes and bars, bachelor quarters and mess, Fort Sam Houston, Tex., to Alamo Iron Works, San Antonio, Tex.; Jacob Banspach Construction Co., San Antonio, general contractor.

126 tons, rebuilding bridge for Chesapeake & Ohio railroad, Brighton, O., to Jones & Laughlin Steel Corp., Pittsburgh.

120 tons, six beam spans, Lancaster county, Nebraska, to Omaha Steel Works.





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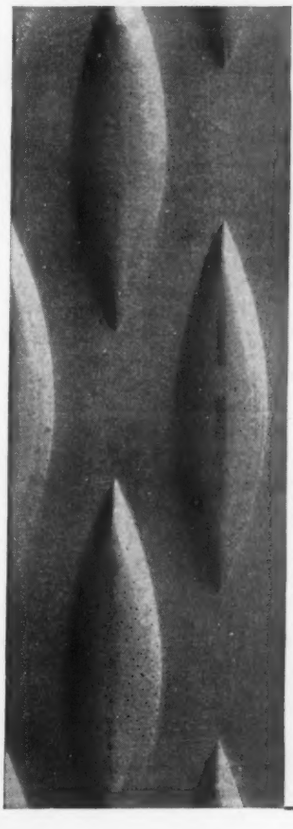

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The Steel Industry is proud of its safety records! That is why you find these scientifically designed floor plates everywhere. They are permanent and sure.

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SAFE • SIGHTLY
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108 Years' Iron and Steel Making Experience

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Branch Offices—Philadelphia—New York—Seattle
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120 tons, building at Broadway and Pearl streets, New York, to George A. Just Co., Brooklyn, N. Y.; through Wills, Taylor & Mafera.

100 tons, bridge spans, Cherokee county, Iowa, to Des Moines Steel Co., Des Moines.

100 tons, buildings for Northrop Corp., El Segundo, Calif., to Consolidated Steel Corp., Los Angeles.

100 tons, dormitory, shapes and bars, Connecticut College for Women, New London, Conn., shapes to Bethlehem Fabricators Inc., Bethlehem, Pa., through Topper & Griggs, West Hartford, Conn., and bars to Truscon Steel Co., Youngstown, O.; A. F. Peaslee Inc., Hartford, general contractor.

100 tons, restaurant, World's fair, Chicago, for John R. Thompson Co., to Wendnagel & Co., Chicago.

100 tons, 24 cranes for Fort Peck dam project, Fort Peck, Mont., to unnamed interests.

Unstated tonnage, head tower trestle and anchors for cableways, Norris dam, Tennessee Valley authority, Knoxville, Tenn., to St. Louis Structural Steel Co., East St. Louis, Ill.

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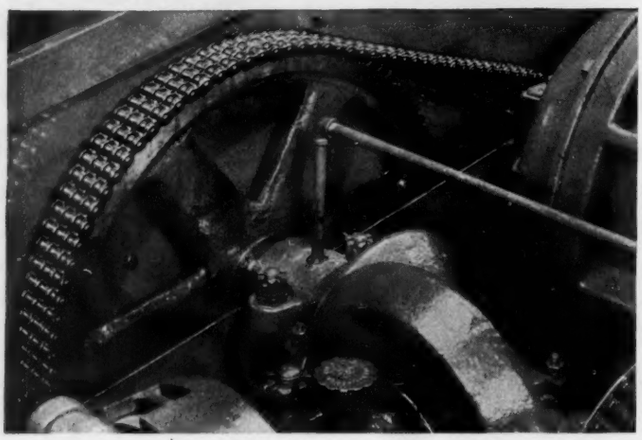

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Contracts Pending

5975 tons, power plant, Boulder canyon project, Colorado, Bureau of Reclamation, Denver; American Bridge Co., Pittsburgh, Pa., low on bulk of requirements; bids April 5.

3000 tons, piling dock at New York, Socony-Vacuum Co., New York.

2946 tons, Ft. Peck dam, Mont. Total tonnage comprised of the following: 1650 tons, main tunnel shaft supports; 696 tons, reinforced intake structure and rack guides; 600 tons, steel shaft supports. Silas Mason Co., 500 Fifth avenue, New York, and Walsh Construction Co., Davenport, Iowa, jointly low at $7,311,940 for general contract.

1761 tons, through truss, deck truss and I-beam bridge, Tionesta township, Forest county, Pennsylvania; P. T. Cox Contracting Co. Inc., New York, low at $243,202.95; bids of April 13 to state department of highways, Harrisburg, Pa.

1500 tons, bridge, New York Central, Palmyra, N. Y.

1400 tons, railroad trestle, Delta Point, La.

1215 tons, bridges and approaches, Caldwell and Franklin-Caldwell parishes, Louisiana; bids May 1.

805 tons, Douglas bridge, Juneau, Alaska; bids April 30 by purchasing office, department of interior, Seattle.

770 tons, five state bridges, Georgia.

680 tons, six highway bridgs, Iowa.

614 tons, state viaduct, Bannock county, Idaho; bids opened.

500 tons, bridge, Lead, S. Dak.

450 tons, bridge, Bracey, Va.

400 tons, state highway bridge, Big Flats, N. Y.

400 tons, bridge, Worland, Wyo.

400 tons, New York Central railroad bridge, Cohoes, N. Y.; bids April 24.

380 tons, state bridge, Perry and Armstrong counties, Pennsylvania; bids April 20.

380 tons, bridge, Bradys Bend, Pa.

350 tons, school, Ocean City, N. J.

300 tons, highway bridges, Indiana.

300 tons, bridges for Chicago, Milwaukee, St. Paul & Pacific railroad.

250 tons, state bridge, Jackson river, Covington, Va.; Wisconsin Bridge & Iron Co., Milwaukee, low.

250 tons, mill building for Grasselli Chemical Co., East Chicago, Ind.; bids being taken.

250 tons, bridge, Muncie, Ind.

250 tons, bridge, Seminole, Okla.

240 tons, bridge, San Francisco, for Southern Pacific Co.

208 tons, through truss bridge, McHenry township, Lycoming county, Pennsylvania, Lackawanna Steel Construction Corp., Buffalo, low at $39,749.17, bids of April 13 to state department of highways, Harrisburg, Pa.; included, 33 tons of plain steel bars.

150 tons, state bridges in four counties in Colorado; bids opened.

150 tons, building, American Express Co., Jersey City, N. Y.

150 tons, building, Jersey City, N. J., for American Railway Express Co.

146 tons, bridge, Calcasieu county, Louisiana; bids in.

145 tons, state bridge, Cow Pasture river, Alleghany county, Virginia; R. W. Moore & Co., Staunton, Va., low.

135 tons, Romes Ferry bridge, Livingston parish, Louisiana; bids May 1.

125 tons, bridge, Adams county, Mississippi.

100 tons, shapes and bars, highways and bridges, Holmes-Leflore and Neshoba counties, Mississippi; bids April 24.

Reinforcing

Reinforcing Bar Prices, Page 51

Pittsburgh—Effective April 27, the new billet steel reinforcing bar market will be 2.05c, Pittsburgh, for cut lengths, this incorporating an advance of $3 a ton announced April 17. An advance is expected shortly on reinforcing bars made from rerolled rails and axles. Award is expected momentarily on 3227 tons for the Ft. Peck, Mont., dam tunnels through Silas Mason Co., New York, and Walsh Construction Co., Davenport, Iowa.

Cleveland—An advance of $3 a ton on new billet reinforcing bars, cut lengths in carlots, has been filed for effect April 25, bringing the Cleveland base to 2.10c. A similar increase is expected in rail steel bars. The Joseph Winterbottom Co., Cleveland, is low on a Columbus, O., sanitary project, requiring 300 tons of concrete bars and 600 tons of tunnel liner plates. No additional public works projects have developed recently. Many of the projects initiated by the CWA, which disbanded April 1, have been left in an uncompleted condition, with no assurance that money will be forthcoming to finish them.

New York—Billet bars will be advanced $3 a ton this week, although buyers will be covered for a limited period on work already bid. The largest award in the East includes 2200 tons of rail steel for the federal warehouse at Washington.

Chicago—Billet steel reinforcing bars have been advanced $3 a ton to 2.10c, Chicago, for cut lengths, effective the end of this month. While a similar change in rail steel material is anticipated, new prices have yet to be filed. Shipments against old orders are expanding with an increase in highway building and other forms of outdoor construction. Bids have been taken on an additional 1267 tons for Chicago sanitary district work, with 600 tons awarded on another unit of this project.

Boston—Awards and inquiry are heavier, the former including close to 700 tons, the bulk for a seawall at Hampton, N. H. Several hundred tons are active with bids in for Massachusetts state highways and bridges. Reinforcing bars are being advanced $3 a ton on new business this week.

Philadelphia—With advance of $3 a ton effective the latter part of this week, there is a rush of buyers to get under cover. The new price on billet steel, in cut lengths, will be 2.34c, delivered Philadelphia. The leading billet bar award in this district re-

Concrete Awards Compared

	Tons
Week ended April 21	5,820
Week ended April 14	3,856
Week ended April 7	5,592
This week in 1933	2,245
Weekly average for 1933	3,771
Weekly average 1934	4,765
Weekly average March	6,313
Total to date 1933	53,409
Total to date 1934	81,012

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cently involved 1100 tons for the Camden, N. J., approach to the high-speed line over the Delaware river bridge.

Contracts Placed

1100 tons, first section, Camden, N. J., approach to the high-speed line over the Delaware river bridge, to the Kalman Steel Corp., Bethlehem, Pa.

2200 tons, rail steel, federal warehouse, Washington, to Kalman Steel Corp., Bethlehem, Pa.; Walter Kidde Constructors Inc., New York, general contractors.

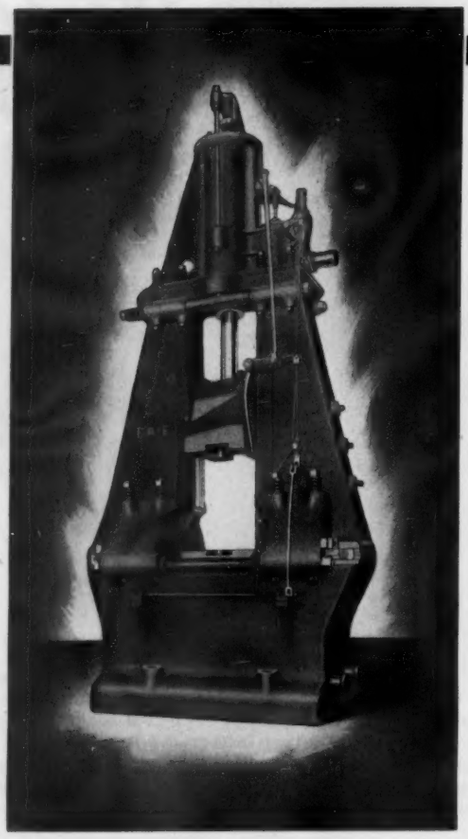
600 tons, Chicago sanitary district project, to Truscon Steel Co., Youngstown, O.

350 tons, Maiden Creek water commission, Reading, Pa., to Kalman Steel Corp., Bethlehem, Pa., through W. S. Rae, Pittsburgh.

350 tons, seawall, Hampton, N. H., to Kalman Steel Corp., Bethlehem, Pa.; Warren Brothers Construction Co., Cambridge, Mass., general contractors.

200 tons, widening Eleventh street bridge, Arkansas river, Tulsa, Okla.; bids in April 20.

Robbing Peter to Pay Paul



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180 tons, grade elimination, Great Neck, N. Y., divided to National Bridge Co., Long Island City, N. Y., and Carroll-McCrary & Co. Inc., Brooklyn; Poirier McLane Corp., New York, general contractors.

175 tons, state bridge and approaches, Newburyport, Mass., to Truscon Steel Co., Youngstown, O.; Arute Bros. Inc., Bridgewater, Mass., general contractors.

150 tons, additional, race track buildings, Arcadia, Calif., to Pacific Coast Steel Corp., San Francisco.

110 tons, state crossing in Grand county, Colorado, to unnamed interest.

105 tons, Federal avenue overpass and approaches, highway 1, Adams county, Colorado, to Colorado Builders Supply Co., Denver; M. E. Carlson, Denver, general contractors.

100 tons, highway project, Auburn, Mass., to Northern Steel Co., Boston.

100 tons, addition to plant of Continental Can Co., Los Angeles, to Graham Bros., Los Angeles.

100 tons, bridge, Rapidan river, Virginia, to Virginia Steel Co., Richmond; Cobb & Homewood, Chapel Hill, N. C., general contractor.

Contracts Pending

3227 tons, dam tunnels at Fort Peck, Mont.; Silas Mason Co., 500 Fifth avenue, New York, and Walsh Construction Co., Davenport, Iowa, jointly low at $7,311,940 for general contract. Project also includes 300 tons of steel strip and 43 tons of bronze pipe, as well as large tonnages of steel plates and structural shapes noted elsewhere.

3000 tons, Columbus, O., sanitary project; Joseph Winterbottom Co., Cleveland, low for general contract.

1267 tons, Chicago sanitary district project; bids closed.

365 tons, highways and bridges, Georgia, mainly for McIntosh and Bibb counties; bids in.

330 tons, bridges and approaches, Caldwell and Franklin-Caldwell parishes, Louisiana; bids May 1.

260 tons, spillway extension, El Capitan dam reservoir, San Diego, Calif.; Bodenhammer Construction Co., Oakland, low on general contract.

235 tons, state viaduct in Bannock county, Idaho; bids opened.

228 tons, twelve-span bridge, Monroe county, Pennsylvania; bids May 4; included 56 tons of shapes.

170 tons, Marine view bridge, King county, Washington; Nelse Mortenson & Co., Seattle, general contractor.

164 tons, items 4, 13 and 23, water filtration plant and intake for Ft. Peck, Mont., dam; bids of April 6; Woodrich Construction Co., National Bank building, Minneapolis, low on general contract at $171,342. Included, 150 lineal feet of 18-inch wrought steel pipe.

156 tons, state underpass in Tucson, Ariz.; bids April 19.

145 tons, Pennsylvania state highway work, Tionesta township, Forest county, Pennsylvania; P. T. Cox Contracting Co. Inc., New York, low at $243,202.95.

141 tons, 2602-foot 100-span reinforced concrete arch, Ridley township, Chester, Pennsylvania; bids to state de-

partment of highways, Harrisburg, Pa., May 4.
100 tons, highway projects, South Carolina; also 85 tons of shapes; bids in.
Unstated, two state bridges at Portland, Oreg.; bids April 26.

Pipe

Pipe Prices, Page 51

Pittsburgh—First price advances on lap, butt weld and seamless steel pipe become effective April 24 following an increase announced by a valley mill on April 14. Similar price increases were announced by Pittsburgh pipe mills through last week for effect late in April. The increase is three and a half points, or $7 a ton, in lap and butt weld sizes, a similar amount in the small seamless sizes and varying amounts of from $6 to $7 a ton in oil country goods. Small miscellaneous pipe orders have increased but large line pipe tonnages still are lacking. Wheeling Steel Corp. is shipping 17,000 feet of pipe to army engineers at St. Louis.

Cleveland—Effective April 24 some makers filed new prices on standard, line, water well and large outside diameter steel pipe, up 3½ points, or $7 a ton. Increases in the prices of oil country pipe range from $6 to $7. Other producers filed similar advances to apply April 27. Tonnage covered by contract is relatively light. No change has been announced in prices of square or rectangular tubes.

Chicago—Announcement of higher prices on cast iron pipe is awaited, revisions being indicated by recent advances in pig iron and in labor costs at pipe foundries. Demand still is light.

Boston—Cast pipe purchases generally are confined to small lots. Steel pipe requirements for building are brighter.

New York—While general advances in steel pipe are scheduled for next week, sellers report no particular buying flurry. A number of large pipe projects are under contemplation, but pending legislation in Washington, it is said, is making financing uncertain. National Tube Co. recently booked 220 tons of steel pipe for the Camden, N. J., approach to the high-speed line over the Delaware river bridge.

Birmingham, Ala.—New business is not as large as manufacturers anticipated. Production of pipe is maintained around 50 per cent.

Cast Pipe Placed

1100 tons, water supply system, Ft. Peck, Mont.; 950 tons to United States Pipe & Foundry Co., Burlington, N. J., and 150 tons to Central Foundry Co., Birmingham, Ala.; C. I. Lytle Construction Co., Sioux City, Iowa, general contractor.
450 tons, 4 to 20-inch, Public Service Corp. of New Jersey, to United States Pipe & Foundry Co., Burlington, N. J.
200 tons, with fittings, state hospital, Wingdale, N. Y., to Donaldson Iron Works, Emaus, Pa.
180 tons, state project, Thiells, N. Y., to Donaldson Iron Works, Emaus, Pa.
150 tons, Gardner, Mass., to R. D. Wood & Co., Florence, N. J.
125 tons, 16-inch, Beaumont, Tex., to National Cast Iron Pipe Co., Birmingham, Ala.
100 tons, small sizes, Wayland, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.
100 tons, Manchester, N. H., to R. D. Wood & Co., Florence, N. J.

Steel Pipe Placed

1200 tons, 25 sections steel pontoon pipe, 32-inch, 52 feet long; and 65 sections, 30-inch, 52 feet long, United States engineer, Memphis, Tenn., to Bartlett, Hayward Co., Baltimore.
Unstated tonnage, 215 sections steel shore pipe, 27-inch, each section 14 feet long, United States engineer,

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Memphis, Tenn., to Lancaster Iron Works Co., Lancester, Pa.

Cast Pipe Pending

1000 tons, estimated, Georgetown, Mass.; preparing plans.

1000 tons, 24-inch, Dallas, Tex., to Oak Cliff, also overhead storage tank, Trinity River Heights.

1000 tons, with fittings, Pelham, N. Y.; Warren Foundry & Pipe Co., Phillipsburg, N. J., low.

315 tons, 12-inch, Lexington, N. C.; bids soon.

265 tons, 8-inch and under, bureau of reclamation, Denver; bids April 24.

135 tons, 4 and 6-inch, Clarkton, Mo., also 50,000-gallon steel tank on 125-foot tower; bids April 25.

Unstated tonnage, 2300 feet of 6-inch, 10,200 feet of 4-inch, waterworks, Clarkton, Mo.; bids May 2, W. A. Fuller Co., St. Louis, engineer; also 50,000-gallon steel tank on 125-foot tower.

Pig Iron

Pig Iron Prices, Page 52

Pittsburgh — Practically no test has been given the advanced prices on pig iron. The Neville Island base price advance went into effect April 17 and the following local market is now quoted on new business to melters sold on that base: No. 2 foundry and malleable grades, $18.50; basic, $18; bessemer, $19; and gray forge, $18.25. For delivery into Pittsburgh, freight rates from 50 cents to $1.13 a ton apply. Little new buying at these advanced prices is looked for over the balance of this quarter. Pittsburgh Steel Foundry Co. will resume operations at its Sharon, Pa., plant about May 1.

Cleveland—Shipments this month are increasing their lead over March and now are about 35 per cent ahead, for the comparable number of days. For the second quarter as a whole the movement is expected to be double that of the first three months of the year. Contracts between producers and consumers do not allow of cancellations of unspecified tonnage. Automotive and railroad requirements continue upward; agricultural demand also is expanding. Manufacturers of heavy machinery, however, are not active in the market.

Chicago — With new prices of $18.50, furnace, for No. 2 foundry and malleable now effective, an unusually large number of consumers are under contract. Users taking as little as 25 tons for the quarter took advantage to contract at the old price and total bookings for delivery prior to July 1 are the heaviest in any quarter for several years. Consumption is well maintained although improvement in foundry operations has been less noticeable recently than during preceding months. Nash Motors Co. has resumed operations and is bolstering pig iron consumption among automotive interests.

Boston—Following active covering and purchasing before the price advance effective April 20, new demand and volume is light.

New York—Specifications are expanding, with most consumers under contract at old prices.

Philadelphia—Consumers generally now appear covered for the current quarter. Sellers report that from the standpoint of number of contracts, this business has been the heaviest in about three years. Possibly the latest eastern basing point to be affected by advances is Birdsboro, Pa., on low phosphorus, $23.50 being named for April 28. Three consumers in this district are reported to have contracted for a substantial tonnage of pig iron in the aggregate with the Troy, N. Y., furnace, scheduled to go in blast May 1.

Buffalo—A third blast furnace has been added to the active battery at the Lackawanna works of the Bethlehem Steel Co. Shipments continue on a broadening scale, and some tonnage has been moved by water.

Cincinnati—Few sales were made during the past week as higher prices went into effect. Tonnage of individual orders does not indicate much speculative buying.

St. Louis — New buying is light but deliveries continue in good volume. Nearly all melters had covered requirements before the $1 a ton price advance. Increase in operations at open-hearth plants, from 6000 tons per week in March to 10,000 tons currently, is a favorable development from the standpoint of pig iron.

Birmingham, Ala.—Shipments are improved but new business is unchanged. A difficult situation is developing in coal mines here with the curtailing of differentials between northern and southern wage scales, lifting costs by $1 a ton. With the decision being appealed, miners have refused to work in some cases.

Toronto, Ont. — Merchant sales show little change from week to week. In face of small inquiries, production of iron is down to about 6000 tons per month, with only one furnace blowing.

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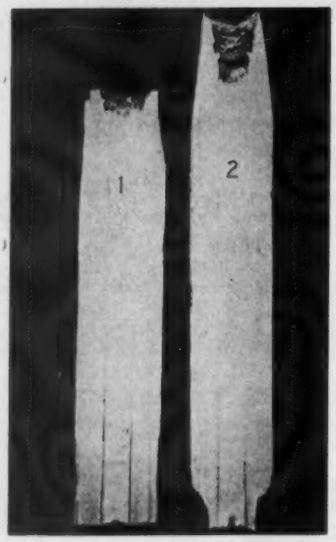

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Scrap

Scrap Prices, Page 53

Pittsburgh—A definitely soft tone in the local scrap market was confirmed last week with continued absence of buying by mills and pressure more pronounced in heavy scrap supplies being offered. Water shipments, now beginning both on the Great Lakes and by barge on the Ohio river, have aggravated this situation so that although No. 1 heavy melting steel is nominally $14 to $14.50, brokers are willing to sell at $14. Machine shop turnings have declined 50 cents. Railroad specialties are surprisingly strong with small sales above $16.50 but low posphorous punchings are weak and blast furnace scrap at $8.50 to $9 is dull. Railroad No. 1 melting scrap was sold here last week at as low as $13.70.

Cleveland—Weakening in prices has resulted in heavy melting steel being marked down 50 cents. Shipments continue at a good rate, but in the valleys they are being regulated by melters.

Chicago—Mills generally are not interested in placing additional orders but are taking fairly heavy shipments. Although one small lot of heavy melting steel was placed at $11.75, dealers find little No. 1 material available at less than $11.50. Automotive heavy melting steel is in relatively heavier supply than industrial or railroad material and is bringing lower prices but is not accepted by all mills. The tone of the market is slightly easier now that mills are covered several weeks ahead, with activity confined largely to dealers' purchases.

Boston—Much of heavy melting steel buying is for eastern Pennsylvania, the largest consumer in this district still holding back on tonnage at present prices, which are steady.

New York—Scrap prices are unchanged on active grades, but volume of shipments to domestic consumers has not been as heavy as expected in view of higher operations. Water shipment to the Buffalo consumer has declined. For barge loading for export dealers continue to pay $9.50 barge.

Philadelphia—Scrap prices have so far failed to respond to advances in pig iron and iron and steel products. The tone of the scrap market is stronger but there have been no actual increases in quotations recently. It is believed, however, that the appearance of sizable tonnage would bring out advances.

Buffalo—Dealers claim Bethlehem and other consumers offering $12.50 for No. 1 heavy melting steel are getting little tonnage and that the local market is steady in spite of reduced offers to purchase. Rail shipments on steel scrap have been temporarily held up at Lackawanna. This is due to the arrival of substantial water shipments, which have complicated the handling of material.

Detroit—With heavy tonnages of scrap offered and local demand at a high rate, the market is dull and rather weak. Heavy accumulations of scrap on docks for water shipment are beginning to move. Loose sheet clippings have declined 50 cents to $6 to $6.50 because of lack of baling equipment to turn it into hydraulic compressed sheets. Consequently, loose sheet clippings are in far the heaviest supply of recent years.

Cincinnati—Quotations on iron and steel scrap are unchanged on transactions in railroad material from recent lists.

Birmingham, Ala.—Larger melters of scrap have not made noticeable purchases but inquiries are being received which indicate there will be need for large tonnage soon.

St. Louis—While prices of iron and steel scrap hold steady, with a somewhat firmer undertone, purchasing is limited. Strength is attributed in large measure to a considerable short interest; offerings are not excessive and are readily absorbed.

Toronto, Ont.—Trading in iron and steel scrap is spotty with demand largely confined to special grades. Local dealers report small movement in steel grades, but there has been some improvement in the Montreal area. Current business is confined largely to iron grades. No. 1 machinery cast is moving at a steady rate in lots up to 100 tons and a few inquiries for larger tonnages recently have appeared.

Warehouse

Warehouse Prices, Page 54

Pittsburgh—Steel warehouse business has improved in April by successive weeks after a rather slow March. Prices are to be advanced, effective April 25.

Cleveland—Warehouse interests have not yet taken action on their prices, mainly because mill quotations still are in the transition stage, ad-

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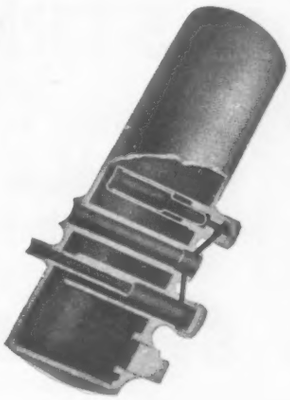

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vances on some products not becoming effective until late this week. As soon as mill adjustments have been completed, however, they will be reflected at warehouses. The volume of business is increasing gradually.

Chicago—Sales from store continue to improve, recently being at the peak level for the year. Large rivets have been advanced from 3.25c to 3.50c, with small rivets now 57½ off list, compared with 60 and 5 off previously. Prices will be advanced April 25 to equal recent mill increases.

New York—While the number of small orders has increased with most jobbers, aggregate tonnage is slightly lower. Prices have not been advanced, although action is expected before May 1.

Philadelphia—Jobbing demand has improved materially, and there has been some buying out of warehouse for future requirements.

Detroit—Steel warehouse shipments have leveled off somewhat but are sustaining the March rate. Warehouses appear to be buying little steel on speculation in view of recent mill price advances.

Cincinnati—Sales from warehouse are close to the March level, with little buying attributed to coverage before anticipated general price advances.

St. Louis—Iron and steel warehouses in this area report some stimulation in purchasing since the advance in mill prices. Forward buying is in better volume particularly by larger consumers.

Nonferrous Metals

Nonferrous Metal Prices, Page 52, 53

New York—Demand for nonferrous metals was quiet last week but this was not unexpected in view of the recent heavy buying when prices were advancing. Prices hold steady with the exception of zinc and tin.

Copper—Consumers came into the market for a few carlots but otherwise activity was slight. The larger users now are believed well covered ahead but another mild spurt in buying may develop when the code is finally signed. Observers look for the metal to at least reach the 9-cent level in the not too distant future. The satistical position of the market has been improving rapidly. Buying of copper wire and cable and rolled brass and copper products also was quiet following recent covering.

Lead—Purchasing moderated considerably but some producers were able to balance ore intake on certain days. April requirements now are well provided for as well as a large portion of May needs.

Zinc—Prime western metal eased $1 a ton but the market could not be said to be in a weak position. Buying was quiet.

Tin—Straits metal dropped to the 55-cent level but firmed up somewhat as the week closed. Spot metal commanded a premium over futures due to a shortage of this position. World supplies probably will decline further in April but no marked advance in prices is looked for due to the stabilizing influence of the tin pool which will be set up shortly.

Antimony—Demand was quiet but prices held steady.

Nickel—Improvement in demand was reported. Canadian production jumped to 9,268,292 pounds in January from 8,788,408 in the preceding month and only 1,780,899 pounds a year ago.

Metallurgical Coke

Coke Prices, Page 51

No change has occurred in beehive foundry coke prices at Pittsburgh, despite recent agitation for a 25-cent per ton allowable deduction for 12-month contracts. The market is $4.60, Connellsville ovens, for common brands and $5.35, for premium grades, although in the latter certain deductions are permitted. Furnace coke at $3.85 and $3.25 for 12-month contracts negotiated at one time are unchanged. In mid-western districts served by Connellsville beehive coke, demand has fallen off.

Foundry coke shipments have increased somewhat at Chicago and reduction in price of domestic coke has stimulated buying. Prices are unchanged for April. Cincinnati prices on by-product foundry coke are unchanged and demand is slightly better. Increased iron melt is indicated by larger demand for metallurgical coke in the St. Louis district.

Iron Ore

Iron Ore Prices, Page 52

Cleveland—The Ford Motor Co. had not closed late last week on 50,000 tons of Lake Superior iron ore for which it inquired and on which last year's prices were quoted. No other tonnage has appeared in the open market for bids. Pending ac-

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tion on the Ford inquiry prices have not been established for the season, though expected to be reaffirmed. The Lake Superior Iron Ore association's current report:

	Tons
Consumed in February	1,727,746
Consumed in March	2,189,566
Increase in March	461,820
Consumed in March, 1933	593,024
Ore on hand at furnaces April 1, 1934	24,059,567
Ore on Lake Erie docks, April 1, 1934	4,981,536
Total at furnaces and Lake Erie docks, April 1, 1934	29,041,103
Total, April 1, 1933	29,556,975

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 51

Nut and bolt manufacturers have decided not to advance prices for second quarter, but a new schedule probably will be filed for third quarter. Most producers committed themselves for the entire second quarter before the increase in steel prices was announced. March volume at Cleveland was 10 to 15 per cent larger than February's and further gains are expected this month, railroad and automobile requirements developing heavier orders.

Several Pittsburgh rivet producers set the effective date for the $3 a ton increase in large rivets at April 20, although others had placed the date of effect on the advance to 3.00c, base, Pittsburgh, and 3.10c, Chicago, earlier in the week. Small rivets are now quoted 70 and 5 off list. Demand continues fairly active at Chicago, with railroad orders heavier. Consumption by the automotive and farm implement industries is well maintained with railroad requirements expected to increase further over the balance of this quarter.

Champion Rivet Co., Cleveland, has been awarded about 400 tons of rivets for the U. S. S. BROOKLYN, ERIE, CASSIN, SHAW, PHILADELPHIA and CHARLESTON, by the navy. The rivets are to conform to the new specification No. 43-R-1d, the most exacting ever made by the navy.

Tin Plate

Tin Plate Prices, Page 50

Pittsburgh—A strong 80 per cent operating rate in the district's tin mills continues, and promises to hold for the balance of this month and at least May. Some tin plate producers have sufficient orders to guarantee continuation of their operations at today's levels through June. In tin mill specialties, recent price advances now are quoted, these being 2.85c for tin mill sizes of black sheets, and 3.65c for No. 24 eight-pound long ternes. Although stock tin plate was advanced to 4.90c, Pittsburgh, contract tin plate at $5.25 is not being changed.

Cold Finished

Cold Finished Prices, Page 51

Pittsburgh—Now that hot-rolled carbon steel bars are quoted 1.90c, Pittsburgh, and cold-drawn remains 2.10c, Pittsburgh, the spread between hot and cold-rolled is to all appearances reduced from $7 to $5 a ton. However, establishment of size, chemical and quality extras makes the cold-drawn base still attractive. Demand from the automotive industry for cold-drawn bars seems to be falling off for May shipment.

They Say:

(*Concluded from Page* 13)

curities exchange act go far beyond the avowed purpose of regulating stock market trading practices. It provides, in effect, for the regulation of American industry in such sweeping fashion that earning power will be impaired and recovery retarded and perhaps defeated. Under the unprecendented scope of this bill a bureaucratic governmental control will be instituted which will throttle legitimate enterprise. Absurd and burdensome requirements are placed upon corporations in specific terms. The proposed measure will diminish the liquidity of securities, hamper the acquisition of new capital and interfere severely with the smooth functioning of the markets. Ultimately it leads directly to the nationalization of all business enterprise."—H. W. Prentis Jr., vice president, Armstrong Cork Co., Lancaster, Pa.

¶"Automobile output for 1934 will exceed that of 1933 by 30 to 35 per cent and may reach 3,000,000 units. Increased labor costs made inevitable by NRA must eventually be passed on to the consumer. The increase in consumer cost, however, is small when compared to the increased cost of production, with the result that the automobile is probably the greatest value, dollar for dollar, that can be bought today."—J. O. Eaton, chairman, Eaton Mfg. Co., Cleveland.

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Manufacturers of cold drawn seamless steel tubing in any form and to any carbon or alloy specification in sizes from 3" outside diameter down to 1/16" and in wall thickness from 5/8" to 26 gauge.
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Sales Representatives:
Chicago . Cincinnati . Cleveland . Detroit . Indianapolis
Memphis . New York . St. Louis . Washington, D. C. . Los Angeles

Pacific Coast

Pacific Coast Prices, Page 51, 52, 54

San Francisco — Price advances feature the market. Steel bars, plates, shapes, sheet piling, hot-rolled annealed No. 10 and cold-rolled sheets No. 10 now are 2.45c, 2.40c, 2.40c, 2.60c, 2.55c and 3.25c, respectively, f.o.b. dock, Pacific ports.

Awards of reinforcing bars were the largest for any week so far this year and aggregated 6585 tons, including 3118 tons for Boulder dam. W. S. Westenhall Co. took 575 tons for the Park street bridge in Oakland, Calif., and Pacific Coast Steel Corp. was awarded 450 tons for race track buildings to be built at Arcadia, Calif.

Utah has opened bids on 140 tons of plates for an 8 to 24-inch pipe line for the agricultural college at Logan, Utah.

Unnamed interests took 244 tons for a crossing in Grand county, Colo. Consolidated Steel Corp. booked 100 tons for buildings at El Segundo, Calif., for the Northrop Corp. Little improvement is noted in cast iron pipe. Only one award in excess of 500 tons has been placed on the coast this year.

Bridge Building Leads

Seattle—Pacific Northwest iron and steel markets are firm. Active buying continues in anticipation of higher prices expected to be adopted next week by the wholesale jobbing trade.

Silas Mason Co. Inc., New York, and Walsh Construction Co., Davenport, Iowa, are low at $7,311,940 for construction of four tunnels at the Fort Peck, Mont., dam site on the Missouri river. The government estimate was $7,890,285. This is the first unit of the $72,000,000 project.

Subject to PWA approval, the Oregon highway commission has formally awarded the contract for the Alsea bridge to Lindstrom & Feigenson and Parker & Banfield, Portland, Oreg., at $685,040. This requires 1000 tons of reinforcing steel and 150 tons of shapes.

Nelse Mortenson & Co., Seattle, was awarded the contract for the King county Marine View bridge at $50,721, requiring 170 tons of reinforcing, still pending. Department of interior purchasing office, Seattle, will open tenders April 30 for 805 tons of shapes for the Douglas bridge, Juneau, Alaska, for the Alaska road commission. For the Pioneer's Home, Sitka, Alaska, 100 tons of reinforcing is pending, Warrick Construction Co., Seattle, having the general contract. Virginia Bridge & Iron Co. has the subcontract for 200 tons of shapes for a state undercrossing in Spokane county, Washington, general contract held by Andrew Sather, Seattle, reported last week to an unnamed eastern plant.

Award is pending for 450 tons of 16-inch cast iron pipe for the Juneau street, extension at Seattle. Spokane, Wash., has authorized bids for furnishing $70,000 worth of material total 13 miles, with pumps and accessories.

The scrap market continues strong and active.

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Steel in Europe

Foreign Steel Prices, Page 54

London (*By Cable*)—Reorganization of the British iron and steel federation has been voted, with certain modifications of the original plan. This makes practically certain continuation of the 33 1/3 per cent import duties on steel and iron products granted to aid the industry until a comprehensive plan could be worked out. In case of failure to attain an effective organization the duty was to be dropped.

Steel and iron exports increased 29,477 tons, from 141,992 tons in February to 171,469 tons in March. Imports declined 1716 tons, from 123,271 tons in February to 121,555 tons in March.

New business generally is quieter but general market conditions are strong. One furnace in Scotland has been restarted. More activity is appearing in trade with Russia, China and South Africa. A domestic railroad has placed 37,000 tons of steel rails.

The Continent reports export markets are dull. France has booked a substantial order for tubes for delivery to Russia.

Equipment

Pittsburgh—No change is reported in a rather quiet steel mill equipment market the past week although potentialities still are strong for buying of important mill units, including those for rolling of extremely wide sheets. Steel mill roll business is steady at recent high levels and demand for ingot molds continues to make good gains. At least one blast furnace relining job is considered active in the Pittsburgh district.

New York—Inquiry for machinery is active, generally for one or two units, with interest well distributed. Orders on business previously figured are developing in a satisfactory way.

Chicago—Further gains are noted in machinery and equipment orders and inquiries. Interest in various equipment markets has increased more rapidly so far this month than was true earlier in the quarter, although some hesitancy still is noted in the making of major commitments. Railroad inquiries for machine tools

as well as for most other types of equipment are light. Demand for foundry equipment continues to improve gradually.

Boston—Machinery and equipment builders have figured a considerable volume which is gradually maturing into orders. Demand is largely for specialty tools of an automatic type. Brown & Sharpe Mfg. Co., Providence, R. I., has booked about $14,000 worth of tools for the navy department.

Cleveland—Equipment buying in this district holds fairly steady, although large expenditures are exceptional. Rising steelworks operations maintain demand for repair items.

Semifinished

Semifinished Prices, Page 51

Advanced prices on semifinished steels now are in effect, but all important users are under contract. A recent counter filing in wire products did not affect the new $38 base on wire rods. The base price of alloy ingots has not been determined, but probably will be $51, Pittsburgh, in view of a similar advance in alloy billets. Carbon billets now are $29, Pittsburgh, and sheet bars $30. The market on skelp is 1.70c, and tube rounds 1.85c, both Pittsburgh base. Tin plate producers still continue the heaviest takers of semifinished steel.

Ferroalloys

Ferroalloy Prices, Page 52

Further improvement is noted in ferromanganese specifications, the movement now being the largest so far this year, reflecting the steady increase in steel making operations. The market continues unchanged at $85, duty paid, eastern seaboard. Domestic spiegeleisen, 19 to 21 per cent, also is unchanged at $26, furnace, for spot shipments, with differentials applying on contracts.

Coke By-Products

Coke By-Product Prices, Page 51

New York—Demand for distillates against contracts is active, with little material available for spot shipment. Lacquer and other industrial requirements are heavier. Naphthalene shipments also are heavier. Prices are unchanged.

Quicksilver

New York—Quicksilver in small lots is quoted here at $76, a virgin flask of 76 pounds, in a quiet market. It is reported some round lot business has been done at $75.50.

Construction and Enterprise

New York

BATAVIA, N. Y.—City is seeking a grant of $75,000 to build a 1,000,000-gallon water storage tank and otherwise expand its water department.

COLLEGE POINT, N. Y.—C. H. Hewitt, 25-45 125th street, plans a shipyard and drydocks to cost about $100,000.

HOOSICK FALLS, N. Y.—Walter A. Wood Co. plant was damaged by fire recently to the extent of $75,000 to $125,000.

INTERLAKEN, N. Y.—A municipal water works to cost $60,000 is being planned here, with construction to begin in about six weeks.

NEW YORK—Atlas Diesel Engine Corp. has been incorporated with $20,000 capital to manufacture machinery, by Crowell & Rouse, 111 Broadway.

NEW YORK — Transcontinental Rest Cabins, care C. T. Graves, 350 Madison avenue, New York, plans to build repair shop and garage on plans by Pennington, Lewis & Mills, 250 Park avenue, New York, at Memphis, Tenn., and Muscle Shoals, Ala., to cost about $50,000 each.

New Jersey

TRENTON, N. J.—Plant formerly operated by J. L. Mott Co., here, has been sold by J. L. Mott Iron Works, 369 Lexington avenue, N. Y., and J. L. Mott Corp., a holding company, to Harry A. Robinson, Philadelphia. Foreign interests are said to be negotiating for the plant. Property consists of 18 acres with 1,000,000 square feet of buildings, with entire stock, patterns, equipment and goodwill of the original J. L. Mott Co. Plant has been closed two years, following receivership.

Pennsylvania

FRANKLIN, PA.—Fire in the engine room of the Franklin Steel Works caused about $3000 damage recently.

LUCINDA, PA.—Carroll-Gatesman Coal Co. plans to rebuild its burned coal tipple and install new equipment, at cost of about $28,000.

MANAYUNK, PA.—Liebert & Obert Brewing Co., M. J. Cooper manager, has plans by Thalheimer & Weitz, 1080 Eighteenth street, Philadelphia, for alterations and extensions to its brewery and increase in storage capacity, to cost about $100,000.

PITTSBURGH—United States engineer, Keenan building, will take bids soon for lock-operating machinery for a 56-foot and a 110-foot lock at Montgomery locks in the Ohio river at Montgomery island.

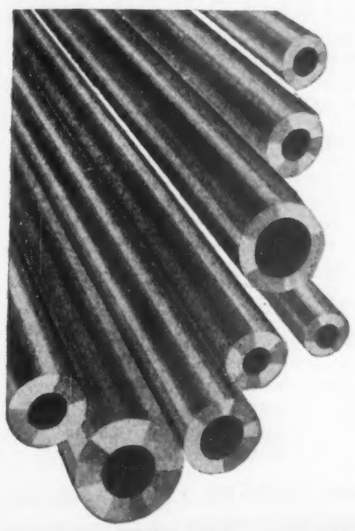
SLATINGTON, PA.—Pennsylvania Natural Slate Blackboard Co. plans a new plant, including a boiler house, electric hoist building and warehouse, replacing its burned plant, at cost of about $80,000.

Ohio

GRANDVIEW HEIGHTS, O.—Town will erect elevated steel water tank, requiring 100 tons of steel plates.

ST. CLAIRSVILLE, O.—Hanna Coal Co. has awarded contract for a four-track tipple and a new cleaning plant here to Link-Belt Co., Chicago.

TOLEDO, O.—Toledo Wire & Iron Inc. has been incorporated by the heirs of the late Frank Powell, reorganizing the company founded 40



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years ago by the latter. Other incorporators are Robert C. Dunn and Franklin Barger.

TOLEDO, O.—Oberly Enameling Co., care W. V. Carney, Spitzer building, plans a 1-story enameling plant, to cost about $28,000.

UPPER ARLINGTON, O.—Town will erect elevated steel water tank, requiring 150 tons of plates.

Michigan

ADRIAN, MICH.—Michigan state administrative board, Lansing, Mich., is having plans prepared for a $70,000 power plant at the girls' training school at Adrian, Mich., and two greenhouses to cost $10,000.

FLINT, MICH.—A. C. Spark Plug Co. is having plans prepared for a 1-story 145 x 250-foot reinforced concrete and steel addition, to cost about $50,000.

KALAMAZOO, MICH.—Upjohn Co. is planning to erect a power plant building to cost $110,000.

LANSING, MICH.—Lansing Brewing Co. will build a brewing plant to cost $80,000. Mildner & Eisen, Detroit, are architects. Charles J. Prost is secretary of the brewing company.

LANSING, MICH.—Lansing Pattern & Mfg. Co. has been incorporated with $15,000 capital to manufacture metal and wood patterns, by Gordon S. Bygrave, 700 Sheridan street.

MARQUETTE, MICH.—The manufacturing plant of the Piqua Handle & Mfg. Co. was damaged by fire recently.

ROCHESTER, MICH.—Greeley & Hanson, Chicago, engineers, have made preliminary plans for a sewage disposal plant for Rochester, to cost $70,000.

Indiana

CROWN POINT, IND.—Board of commissioners of Lake county plan to install a diesel engine for power and electric light at the county poor farm. E. F. Schweibach, Crown Point, Ind., is engineer.

EAST CHICAGO, IND.—Wadhams Oil Co., Milwaukee, will build five oil storage tanks here.

FORT WAYNE, IND. — Kennedy Mfg. Co., 727 Clinton street, Beneti Fox, resident agent, has been reorganized with capital stock of 21,000 shares to deal in metal goods.

Illinois

CHICAGO—General Appliances Sales Corp., 122 South Michigan avenue, has changed its name to Bryant Gas Heating Inc. Correspondent: Bergstrom & Fisher, Suite 1118, 134 North LaSalle street.

CHICAGO—Century Smelting & Refining Co., 2135 South Loomis street, has been incorporated to manufacture metals and alloys, by Phillip H. Goldberg, Alex Goldberg and Louis Goodstein. Correspondent: Tarnopol & Flamm, 134 North LaSalle street.

CHICAGO—American Staple Corp., 119 South Wells street, has been incorporated to manufacture staples and stapling machines, by Angelo P. Franzese, Harold Balkin and Margaret Franzese. Correspondent: Preston A. Higgins, 139 North Clark street.

CHICAGO — Safety Socket Screw Corp., 1436 North Keating avenue, has been incorporated to manufacture and sell screw machine products, by Albert W. Overton, Florence A. Overton and Virginia C. Payne. Correspondent: S. Yale Fischman, 100 North LaSalle street.

District of Columbia

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids as follows: April 24, schedule 2235, one motor-driven shaper, delivery Homestead, Pa.; schedule 2236, one electric motor and control equipment, delivery Philadelphia; schedule 2239, two motor-driven, selective head, tool room lathes, delivery Washington; schedule 2240, one motor-driven milling machine, delivery Washington; schedule 2241, one motor-driven combination drilling and tapping machine, delivery Washington; April 27, schedule 2213, humidifying equipment, delivery Philadelphia.

May 1, schedule 2259, one gasoline engine-driven self-propelled crane with swinging boom, delivery Washington; schedule 2260, two electric stud welding equipments, delivery Boston and Philadelphia; May 4, schedule 2278, one motor-driven milling machine, delivery Newport, R. I.

Georgia

ATLANTA, GA.—Southern Wheel Co., Hemphill avenue, northwest, has let contract to Pittman Construction Co., Rhodes building, for 1-story addition to cost about $25,000.

Louisiana

LULING, LA.—Milliken & Farwell, Maritime building, New Orleans, will soon receive bids for rebuilding burned sugar mill near Luling and will also receive bids on machinery.

Maryland

VIENNA, MD.—Town commissioners received low bid from Shannon Well Co., St. Michaels, Md., for water supply, including pumping station and equipment. Francis A. Dryden, Salisbury, Md., is engineer.

South Carolina

CHARLESTON, S. C. — Charleston navy yard has $25,000 allotment for modernizing machine tools.

West Virginia

CEDAR GROVE, W. VA.—Kelly's Creek Colliery Co., Western Reserve building, Cleveland, a division of Valley Camp Coal Co., plans construction of a river terminal and coal loading dock on the right bank of the Kanawha river at Cedar Grove, W. Va.

STAR CITY, W. VA.—Osage Coal Co., Morgantown, W. Va., has asked permission of federal engineer to build a coal loading dock at Star City, W. Va., on the Monongahela river.

Missouri

CLARKTON, MO.—City, A. V. Rice, mayor, will receive bids May 2 for water works, including pump house building, motor-driven deep well turbine pump and 50,000-gallon steel tank on 125-foot tower. W. A. Fuller Co., 2916 Shenandoah avenue, St. Louis, is engineer.

JOPLIN, MO.—Southwest Water Corp. has plans for a 150,000-gallon steel water tank on 165-foot steel tower in connection with its waterworks. Schink & Miller, 110 East Fourth street, are engineers.

KANSAS CITY, MO.—Air Conditioning Corp. of Missouri Valley has been incorporated by E. Olseon, and Robert M. Coleman, Victor building.

KANSAS CITY, MO.—Johnson Furnace Co. is planning to expand its operations in the manufacture and installation of heating plants and air conditioning equipment, having taken over the machinery and equipment of the National Air Control Co.

ST. LOUIS—Ramsey Accessories Mfg. Corp., 3693 Forest Park boulevard, has let contract to Atlas Construction Corp., 817 North Ninth street, for 1-story addition to automobile equipment plant to cost $50,000.

Oklahoma

FAIRFAX, OKLA.—Murray Tool & Supply Co., Philtower building, Tulsa, Okla., has erected a machine shop here, 36 x 80 feet, including a forging department, 20 x 30 feet. Charles F. Bailor is shop foreman in charge.

Texas

HUMBLE, TEX.—City, J. B. Dubose, mayor, receives bids May 3 for complete waterworks system, including a 100,000-gallon elevated tank. A PWA loan and grant of $80,000 has been authorized. M. K. Garrett is consulting engineer.

Wisconsin

GREEN BAY, WIS.—G. G. Esterman, 216 Main street, has organized the Economy Luggage Co. to manufacture a wide line of trunks, bags and other luggage, specializing in strong, lightweight types for airplane travelers.

MILWAUKEE — Allis - Chalmers Mfg. Co. is low bidder on air compressor equipment with capacity of 50,000 cubic feet per minute for the extension of Jones island sewage dis-

posal plant; bleeder type is quoted $106,770 and straight condensing type $102,680; alternate bids on additional units are $99,850 and $96,250, respectively.

MILWAUKEE — Following withdrawal of Milwaukee O'Neil interests from the Barnsdall-O'Neil Oil Co., Barnsdall Refineries Inc., 324 East Wisconsin avenue, Milwaukee, will build a warehouse, office, bulk station at South Forty-first and West Scott street, with capacity of 1,300,000 gallons, to cost about $150,000. W. T. Hansen is division engineer.

Minnesota

BLOOMING PRAIRIE, MINN.—Village council, K. D. Wold, village recorder, will receive bids until April 27 for new pumping equipment at present well and pump house and complete construction of new sewage disposal plant. P. R. Banister, North St. Paul, Minn., is engineer.

MINNEAPOLIS—Chicago, Milwaukee, St. Paul & Pacific will build a 2-stall addition to roundhouse at Hiawatha avenue and Twenty-sixth street.

MINNEAPOLIS—Monomelt Co. has been incorporated with capital of $200,000 to manufacture mechanical appliances, by John W. Thompson, St. Paul; Wesley E. Conklin and Leonard G. Olander, Minneapolis.

WINONA, MINN.—Board of education, C. F. Baumann, president, will soon take bids for 2-story, 157 x 246-foot elementary school to cost $300,000, including manual training and domestic science departments. Two boilers and two stokers will be installed in heating plant. Boyum, Schubert & Sorensen, 117 West Third street, are architects.

North Dakota

BISMARCK, N. D.—Capitol City Brewery Co., recently incorporated with capital stock of $350,000, will build a complete new brewing plant. G. F. Weinrich, New Salem, N. D., is president of the company.

VALLEY CITY, N. D.—City council will receive bids until May 7 for boiler for city light and power plant. W. T. Craswell is city auditor.

WATFORD CITY, N. D.—Village council, May Scollard, village clerk, will take bids in June for waterworks and sewage system to cost about $65,000, including pumping plant, steel tank and water distribution system. W. S. Peterson, Minot, N. D., is engineer.

Iowa

DUBUQUE, IOWA—Dubuque Oil Burner Co., 51 West Thirty-second street, A. E. Decker, secretary, is remodeling a 4-story building into a factory for the manufacture of oil burners at a cost of $25,000. New machinery will be installed.

GUTTENBERG, IOWA—Bids received April 2 for municipal light and power plant rejected and new bids will be received in May. Light and power plant will include two 300-horsepower diesel engines and auxiliary equipment and will cost approximately $70,000. H. E. Schute is town clerk. E. Van Vleet, 791 Nevada street, Dubuque, Iowa, is engineer.

Montana

MISSOULA, MONT.—Northern Pacific will build 5-stall addition to roundhouse to cost $35,000. O. M. Rognan, 1228 Railroad building, St. Paul, Minn., is company architect.

Pacific Coast

DOWNEY, CALIF.—Plans are being prepared by T. C. Kistner & Co., 814 Architects building, Los Angeles, for reconstruction of a shop building at Downey high school.

HILMAR, CALIF.—An election will be held April 30 on $30,000 bond issue for construction and equipment of a shop building and gymnasium for Ripon high school, W. H. & Harold Weeks, 525 Market street, San Francisco, are architects.

LOS ANGELES—Machinery Distributing Co. has been incorporated with 2500 shares of par value by J. W. Drake, Essie W. West and Gordon Hall.

LOS ANGELES — Willys-Overland Co. automobile plant has reopened here after being idle for a year, and its affairs were taken over recently by Wills Distributors Inc. Purchases of springs, bumpers and steel stampings will be made in southern California.

POMONA, CALIF.—T. C. Kistner & Co., 814 Architects building, Los Angeles, is making plans for a shop building for Pomona high school, to cost about $13,500.

SAN BERNARDINO, CALIF.—Parker Ice Machine Co., 943 Third street, W. K. Murphy chairman of the board of directors, is having plans made for a manufacturing plant at San Bernardino, Calif.

SEATTLE — Commercial Boiler Works, 53 West Lander street, has let contract to W. G. Clark, 408 Aurora avenue, to repair its plant, recently damaged by fire.

SEATTLE—Federated Metals Corp., 120 West Massachusetts street, is building a 1-story office and warehouse involving 20,000 square feet of floor space.

TACOMA, WASH.—Olympic Casket Co. will build a new plant, 45 x 100 feet, at 1602 Center street, to cost about $10,000.

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HEADER—No. 2 O.D.T.S. WATERBURY FARREL Open Die, Triple Stroke. Cap. 1/4" to 3/8" dia. wire. BD. Like new.
MAGNET—45" ELECTRIC CONTROLLER MFG. CO., 220 v. DC.
PRESS—No. 6-1/2 BLISS Str. Side, Double Crank with spring counterbalance. Belt drive. 54" bet. housings. 8" stroke.
OTHER MECHANICAL AND HYDRAULIC PRESSES FOR A WIDE VARIETY OF TYPES AND CAPACITIES OF WORK.
ROLLING MILL—Rolls 24" wide by 12" dia. and equipped with a 22 HP, 220 v. 3 ph. 60 cy. Western Electric motor with starter and switch box.
SHEARS—62" STAMCO Gate. Capacity 1/2" plate. 18" gap. Driven by a 20 HP, 3 ph. 60 cy. AC motor. Power actuated hold-down clamp. Modern machine. Practically new.
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